

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-020764

(43)Date of publication of application : 23.01.1998

(51)Int.Cl.

G09B 9/04
B60R 21/26
G01M 17/007

(21)Application number : 08-188427

(71)Applicant : IMANO SANGYO KK

(22)Date of filing : 28.06.1996

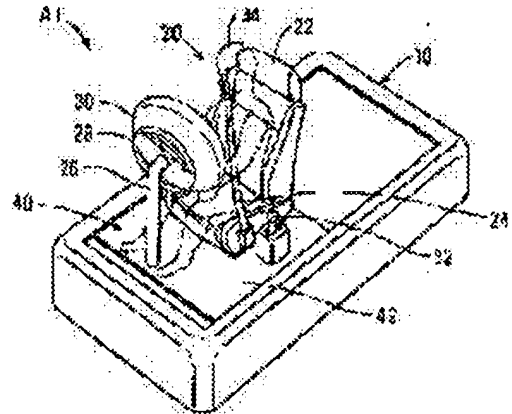
(72)Inventor : HASHIGUCHI KEISUKE
SUZUKI KOJI

(54) CAR CRASH SIMULATING AND EXPERIENCING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To simultaneously simulate and experience the impact at the car crash, and the condition of an air bag instantaneously expanding just before a driver, by sliding a car driving simulating device on a track, returning a transferring device to an original position, and making the expansion and shrinkage of the air back repeatable.

SOLUTION: A slide base 42 is slid forward along a rail. The slide base 42 is suddenly stopped when a spring bracket of the slide base 42 is brought into contact with an inhibit device. The air bag 30 is filled with air just before a driver 34 simultaneously, so that it is instantaneously expanded. Then a driving motor of a driving part of a driving device is rotated, and a clutch interlocked therewith through a chain, is also rotated. Accordingly a drum is also rotated, so that a wire extended in accompany with the forward sliding of the slide base 42, is wound up. Thereby the slide base 42 is returned to the original position. Further the air in the expanded air back 30 is sucked by the operation of a vacuum device while moving backward, to be shrunk and contained.



CLAIMS

[Claim(s)]

[Claim 1] The orbit prepared in the stand, a seat, seat belt equipment, and the automobile operation mimicking device that consists of handles which have an air bag, The concrete supply system which makes this automobile operation mimicking device glide over this orbit top using a deformation flexible operation of a spring material, Automobile collision simulation experience equipment characterized by to have the suppression equipment which inhibits elongation of this spring material, the driving gear which returns this concrete supply system even to a original location, the insurance supporting structure which makes the above-mentioned concrete supply system which returned even to the original location hold, and air equipment which enables iteration of expansion contraction of this air bag.

[Claim 2] Automobile collision simulation experience equipment according to claim 1 characterized by for air equipment having made sequential connection of the air tank in which the air taken in from the outside is stored, a vacuum device, the air bag which it has for the handle of an automobile operation mimicking device, and the change-over valve, and enabling iteration of expansion contraction of this air bag in response to the automatic controller arranged in the orbit over which a concrete supply system glides.

[Claim 3] Automobile collision simulation experience equipment according to claim 1 or 2 with which an automobile operation mimicking device is characterized by having side air bag equipment.

[0001]

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[Field of the Invention] This invention relates to the equipment which can carry out simulation experience of the expansion condition of an air bag just before human being especially about automobile collision simulation experience equipment in the case of an automobile collision.

[0002]

[Description of the Prior Art] The automobile collision simulation experience equipment from the former was equipment which human being sits on a seat in general, and only a seat belt is made to be fastened, and a slant face is prepared [equipment], carries out natural fall of the seat, and carries out simulation experience of the impact in the case of an automobile collision.

[0003]

[Problem(s) to be Solved by the Invention] However, the traffic-paint consciousness of a driver increases by frequent occurrence of an automobile accident in recent years, the case where a private vehicle is equipped with an air bag is increasing quickly, and further, since each automaker company has also standard-equipment-ized the air bag, with above conventional equipment, the case where the simulation of the actual automobile collision cannot be carried out completely has been produced. Moreover, in the flume with which automobile accidents occur frequently, since it can say that it is usually rare to actually encounter a motor vehicle collision, simulation experience of the expansion condition of the air bag at the time of a collision is carried out beforehand, and it is also required to train so that it may not be panicked in case of emergency.

[0004] Then, it aims at providing coincidence with the automobile collision simulation experience equipment in which simulation experience is possible for the impact in the case of an automobile collision, and the condition of the air bag which expands in an instant just before human being as part of traffic-paint education. In addition, in addition to air bag equipment, the automobile equipped with the side air bag equipment which expands an air bag from human being's side also actually appears, and it aims also at offer of the equipment which can carry out simulation experience of it.

[0005]

[Means for Solving the Problem] It is created in order that this invention may solve the above-mentioned trouble. In the first place The orbit which is automobile collision simulation experience equipment and was prepared in the stand, a seat, and seat belt equipment, The automobile operation mimicking device which consists of handles which have an air bag, and the concrete supply system which makes this automobile operation mimicking device glide over this orbit top using a deformation flexible operation of a spring material, It is characterized by having the suppression equipment which inhibits elongation of this spring material, the driving gear which returns this concrete supply system even to a original location, the insurance supporting structure which makes the above-mentioned concrete supply system which returned even to the original location hold, and air equipment which enables iteration of expansion contraction of this air bag.

[0006] If human being takes a seat on the seat of an automobile operation mimicking device prepared on the concrete supply system arranged in the automobile collision simulation experience equipment of this first configuration in the original location on the orbit prepared in the stand, a seat belt puts firmly on it and a starting switch turns ON, the spring material which was in the deformation contraction condition develops, and this concrete supply system will carry out the advance skid of this orbit top. And if the tip of this spring material contacts suppression equipment, if the quick stop of the above-mentioned concrete supply system is carried out simultaneously, air equipment will operate, and the air bag which it has for the handle of this automobile operation mimicking device will expand in an instant. After human being secedes from this seat, while a driving gear operates and the above-mentioned concrete supply system returns to a original location, air equipment operates and this air bag that once expanded carries out contraction receipt. Furthermore, the

insurance supporting structure works and the above-mentioned concrete supply system is certainly held in a original location at the same time the above-mentioned concrete supply system returns to a original location. [0007] With the automobile collision simulation experience equipment of this configuration, it can act calmly calmly, without being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver.

[0008] Moreover, sequential connection of the air tank which stores the air which air equipment took in from the outside in the second in the automobile collision simulation experience equipment of the configuration of the above first, a vacuum device, the air bag which it has for the handle of an automobile operation mimicking device, and the change-over valve makes, and it is characterized by to enable iteration of expansion contraction of this air bag in response to the automatic controller arranged in the orbit over which a concrete supply system glides.

[0009] In the automobile collision simulation experience equipment of this second configuration, the automatic controller which arranged passage of a concrete supply system into orbit detects, a change-over valve switches in response to the signal which this automatic controller emitted in response to it, the air of the air tank taken in and stored from the outside is fed into the air bag which it has for the handle of an automobile operation mimicking device, and this air bag expands in an instant. And further, by switching of this change-over valve, a vacuum device operates, and is attracted, and the above-mentioned air bag carries out the contraction receipt of the air in the above-mentioned air bag which once expanded. With the automobile collision simulation experience equipment of this configuration, since air equipment has the above configurations, expansion contraction of an air bag can be repeated repeatedly and can be carried out.

[0010] Furthermore, in the automobile collision simulation experience equipment of the above-mentioned first or the second configuration, an automobile operation mimicking device is characterized by having side air bag equipment the third. In the automobile collision simulation experience equipment of this third configuration, if a concrete supply system carries out a quick stop simultaneously, air equipment will operate, and the side air bag which it has to the air bag or side air bag equipment which it has for the handle of an automobile operation mimicking device expands in an instant. Moreover, this air equipment operates and this air bag or this side air bag which once expanded carries out contraction receipt.

[0011] With the automobile collision simulation experience equipment of this configuration, it can act calmly calmly, without being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag or side air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver. Moreover, expansion contraction of an air bag or a side air bag can be repeated repeatedly, and can be carried out.

[0012]

[Embodiment of the Invention] One example made into the gestalt of operation of this invention is explained using a drawing. First, the first example is explained from drawing 1 using drawing 7. The automobile collision simulation experience equipment A1 of an example has the control unit which is not illustrated with a stand 10, the automobile operation mimicking device 20, a concrete supply system 40, suppression equipment 52, a driving gear 60, the insurance supporting structure 100, and air equipment 140 for a start [this]. Here, the stand 10 consists of a frame 12, a rail 14 which becomes on an orbit, and the base 16.

[0013] A frame 12 is used combining shape steel material, and is formed in the cube type configuration. That is, a framework is formed in a rectangle from the lower door-post material 125 and 126 and the lower transversal frame material 127 and 128, the stanchions 131, 132, 133, and 134 of the same die length are set up in the four corners, and on the stanchion, as shown in drawing 2, a framework is formed at a rectangle from the up door-post material 121 and 122 and the up transversal frame material 123 and 124.

[0014] A rail 14 is double T steel, and the cross section presents the configuration where the migration member 44 arranged in the four corners of the inferior surface of tongue of the slide base 42 of the concrete supply system 40 which carries out a postscript can fit in, and as shown in drawing 4 , it is prepared two in parallel with the up door-post material [of this frame 12] 121, and 122 top. The base 16 presents tabular and is fixed on the lower door-post material 125 and 126 of the above-mentioned frame 12, the lower transversal frame material 127, and 128. In addition, the various equipments which carry out a postscript are altogether attached in this stand 10.

[0015] Next, the automobile operation mimicking device 20 is altogether attached in the top face of the slide base 42 of the concrete supply system 40 which carries out a postscript, as shown in drawing 1 . The handle stanchion 26 is hollow-like and the handle 28 which set up in the center near the front end section of the top face of the above-mentioned slide base 42, and contained the air bag 30 is attached in the point of this handle stanchion 26. A handle 28 has the centrum of the above-mentioned handle stanchion 26, and the pore which was open for free passage, and has the structure where this air bag 30 expands by feeding of air. The above-mentioned air bag 30 is attached in this handle 28, and as shown in drawing 7 , it is presenting saccate [circular].

[0016] A seat 22 is installed in the center of abbreviation of the top face of the slide base 42 of the concrete supply system 40 which carries out a postscript, and the seat belt equipment 24 which puts the seat top firmly on tucking up its sleeves with a cord is arranged. Moreover, the starting switch 32 which starts the automobile collision simulation experience equipment A1 whole is formed near the left-hand side section of the seat of this seat 22. And this starting switch 32 is connected with the control unit which is not illustrated. in addition, these arrangement of the automobile where the arrangement relation (height of the handle 28 when human being sits on a seat 22 and the distance Sagitta seat 22 between handles 28 etc.) between the above-mentioned seat 22 and the above-mentioned handle 28 is actual and abbreviation -- it is the same.

[0017] Next, the concrete supply system 40 consists of a slide base 42, the migration member 44, a spring guide 46, a coil spring 48 that becomes with a spring material, and a spring bracket 50. Here, a slide base 42 presents tabular and the location shown in drawing 2 and drawing 3 is arranged as a original location. And the migration members 44 are the four corners of the inferior surface of tongue of the slide base 42, and are arranged possible [fitting] by two rails 14 laid by the above-mentioned frame 12. Moreover, the spring bracket 50 which carries out a postscript has fixed in the center of the front end section of this slide base 42. As shown in drawing 4 , a cross section is a reverse concave, among those many ball bearings are arranged in the both-sides side of a slot, and in case the migration member 44 is migration, unlike the mere roller, it has the structure which does not almost have friction with a rail 14.

[0018] The spring guide 46 presents the shape of a rod, and as shown in drawing 2 and drawing 3 , it is constructed over the center section of each of that transversal frame material through the bracket between the up transversal frame material 123 of the above-mentioned frame 12, and 124. A coil spring 48 is inserted in this spring guide 46, it is fixed to the bracket with which the end was attached on the above-mentioned up transversal frame material 124, and the point is attached in the spring bracket 50 which carries out a postscript. In addition, the usual die length of this coil spring 48 to which a load is not applied has the die length of the above-mentioned spring guide 46, and the die length of abbreviation identitas.

[0019] The spring bracket 50 presented strip-of-paper-like tabular, rather than the diameter of the above-mentioned spring guide 46, it had one pore of a major diameter a little, and was arranged in the shape of suspension in the center of the front end section of the above-mentioned slide base 42, and the above-mentioned spring guide 46 has penetrated the pore. Moreover, as shown in drawing 3 , the tip of the wire 98 twisted around the drum 96 arranged in the clutch section C of the driving gear 60 which carries out a postscript is connected with the lower limit section of this spring bracket 50.

[0020] Next, suppression equipment 52 is formed by the coil spring, as shown in drawing 2 and drawing 3 . That is, it is inserted in the above-mentioned spring guide 46, and the end is being fixed to the bracket

attached on the above-mentioned up transversal frame material 123. The point contacts the above-mentioned spring bracket 50, when the above-mentioned coil spring 48 carries out the maximum elongation.

[0021] Next, the driving gear 60 has a mechanical component D, the clutch section C, and cylinder part CL. Here, as shown in drawing 2 and drawing 3, a mechanical component D is fixed crosswise in the above-mentioned base 16 top, and consists of a drive motor 62, a sprocket 64, and a chain 66. The drive motor 62 is connected with the sprocket 84 which a sprocket 64 is arranged by the revolving shaft and it has in the clutch section C which carries out a postscript through the chain 66.

[0022] As shown in drawing 2, cylinder part CL is fixed crosswise in the above-mentioned base 16 top, and consists of a cylinder bracket 68, a cylinder 70, and floating joint 72. As a cylinder 70 is arranged crosswise in parallel to the above-mentioned base 16 and is shown in drawing 5 (b), a cylinder case is fixed with the cylinder bracket 68, the other end is arranged so that a piston may carry out both-way rectilinear motion, and the cylinder-like floating joint 72 is inserted in the center section of the piston. Furthermore, the tip of this piston has fixed with the bracket which it has in the end side of the cylinder attachment plate 78 of the clutch section C which carries out a postscript. In addition, in response to the signal from the sensor 142 which carries out a postscript, by switching of a solenoid valve 144 which carries out a postscript, this cylinder 70 is set up so that a piston may perform both-way rectilinear motion.

[0023] Next, as it is shown in drawing 2 so that the clutch section C may make it this mechanical component D and this cylinder part CL interlocked with The above-mentioned base 16 top is fixed crosswise. The cylinder attachment plate 78, The migration member 80, a rail 82, a sprocket 84, and the fixed electrode holder 86, It consists of the drive shaft 88, a clutch 90 (the clutch by the side of 90a and passive movement is called 90b for the clutch of a driving side), the fluctuation electrode holder 92, a follower shaft 94, a drum 96, and a wire 98. Here, the cylinder attachment plate 78 presents tabular [rectangular], is attached at the tip of the piston of the above-mentioned cylinder 70 through a bracket, is interlocked with a both-way rectilinear motion of this piston, and operates.

[0024] That is, as shown in drawing 5 (b), this cylinder attachment plate 78 can move the two rail 82 top with which four migration members 80 (migration member 44 reference explained above) were attached and laid according to a both-way rectilinear motion of the above-mentioned piston to the inferior surface of tongue. In addition, this rail 82 has the die length which can cut or connect the clutch 90 which carries out a postscript by both-way migration of the above-mentioned cylinder attachment plate 78.

[0025] As the fluctuation electrode holder 92 is shown in drawing 5 (a) and (b), it was set up by the location of the center of abbreviation of the top face of the above-mentioned cylinder attachment plate 78 in the shape of a stanchion, and the follower shaft 94 has penetrated the abbreviation center section. And fitting of a drum 96 and the clutch 90b by the side of passive movement is carried out to the both ends of this follower shaft 94. In addition, as mentioned above, the wire 98 is wound and the drum 96 has connected the tip with the lower limit section of the above-mentioned spring bracket 50. As the fixed electrode holder 86 shows drawing 5 (a) and (b) like the fluctuation electrode holder 92, the shape of a stanchion was presented, and it is the location and the opposite side in which the above-mentioned cylinder part CL was arranged, and was set up on the above-mentioned base 16 by the location on the production of the above-mentioned rail 82, and the drive shaft 88 has penetrated the abbreviation center section. And fitting of clutch 90a of a driving side and the sprocket 84 is carried out to the both ends of this drive shaft 88. In addition, the above-mentioned drive shaft 88 and the above-mentioned follower shaft 94 are arranged on the same axial center. Moreover, as shown in drawing 5 (a), this sprocket 84 is arranged on the same line as this sprocket 64 in order to connect it with the sprocket 64 arranged by the drive motor 62 of a mechanical component D through a chain 66.

[0026] Next, the insurance supporting structure 100 consists of the stopper section S and an insurance attaching part H. Here, the stopper section S has the stopper bracket 116 and the stopper 118. As are shown in drawing 3, and it is L character-like, and it is the inferior-surface-of-tongue back end section of the above-mentioned slide base 42 and it is shown in drawing 4, pair side-by-side installation of the stopper bracket 116

is carried out inside the above-mentioned migration member 44 currently arranged. A stopper 118 presents the shape of a bolt, as shown in drawing 3 and drawing 4, and buffer members, such as rubber, are attached in the end side. And this stopper bracket 116 is penetrated and it is prepared.

[0027] The insurance attaching part H has the attaching part bracket 102, a slide guide 104, a cylinder 106, the floating joint 108, bearing 110, the shaft 112, and the roller follower 114. As the attaching part bracket 102 is shown in drawing 2 and drawing 3, it is L character-like, and has a rib plate in a back backside, and the slide guide 104 which becomes outside the U shape which guides a both-way rectilinear motion of the piston of a cylinder 106 is attached in the before side upper part. And when the above-mentioned slide base 42 is in a original location, this attaching part bracket 102 is fixed on the location immediately before this stopper's 118 buffer member on the above-mentioned base 16.

[0028] As a cylinder 106 is shown in drawing 3, when the above-mentioned slide base 42 is in a original location, between the above-mentioned attaching part bracket 102 and the above-mentioned stopper's 118 buffer member, a cylinder case side is arranged on the above-mentioned base 16, and the piston carries out both-way rectilinear motion in the direction of a vertical. The cylinder-like floating joint 108 is inserted in the pars intermedia, and, as for this piston, the U-shaped bearing 110 is further arranged at the tip. And a shaft 112 penetrates the roller follower 114 and is arranged by this bearing 110. The above-mentioned roller follower 114 is arranged on the locus of the above-mentioned stopper 118 which the above-mentioned stopper 118 and this roller follower 114 are the height level whose contact is attained when the top has the piston of this cylinder 106, and moves according to migration of the above-mentioned slide base 42. In addition, in response to the signal from the sensor 142 which carries out a postscript, by switching of a solenoid valve 144 which carries out a postscript, the above-mentioned cylinder 106 is set up so that a piston may perform both-way rectilinear motion.

[0029] Next, air equipment 140 consists of the sensor 142 which becomes with an automatic controller, the solenoid valve 144 which becomes by the change-over valve, an air tank 146, the change-over valve 148 which has a cylinder, a vacuum device 150, the air intake 152, a filter regulator 154, a pressure switch 156, and communication trunks 158 and 160, as shown in drawing 6. Here, a sensor 142 is the medial surface of the up door-post material 122 of the above-mentioned frame 12, and as shown in drawing 2, it is formed three places in order of 142a, 142b, and 142c toward the above-mentioned up transversal frame material 124 from the above-mentioned up transversal frame material 123. That is, sensor 142a is arranged in the front location rather than the front end section of the above-mentioned slide base 42 in a original location. Moreover, Sensors 142b and 142c are arranged in the location which can detect the original location of the above-mentioned slide base 42, respectively.

[0030] A solenoid valve 144 is connected with each cylinder so that it may operate the cylinder which it connects [cylinder] with this sensor 142, and operates the cylinder 70 of cylinder part CL of the above-mentioned driving gear 60, the cylinder 106 of the insurance attaching part H of the above-mentioned insurance supporting structure 100, and the change-over valve 148 that carries out a postscript. An air tank 146 presents an approximate circle column configuration, and as shown in drawing 2 and drawing 3, it is fixed on the above-mentioned base 16 between the arrangement location of the above-mentioned insurance attaching part H, and the above-mentioned lower transversal frame material 128. According to actuation of the change-over valve 148 to which this air tank 146 stores and carries out the postscript of the air temporarily, the stored air is fed into the air bag 30 contained for the handle 28 through the pipe-like communication trunk 160 and the handle stanchion 26 of the above-mentioned automobile operation mimicking device 20, and expands this in an instant. Moreover, the air intake 152, the filter regulator 154, a pressure switch 156, and the above-mentioned air tank 146 are the pipe-like communication trunks 158, and sequential connection is made.

[0031] Here, the filter regulator 154 is for removing the impurity contained in the air taken in from this air intake 152. Moreover, a pressure switch 156 is for adjusting the pressure of the taken-in air. Moreover, the

handle stanchion 26 of the above-mentioned air tank 146, a change-over valve 148, a vacuum device 150, and the above-mentioned automobile operation mimicking device 20 is this communication trunk 160, and sequential connection is made. A change-over valve 148 is a circuit changing switch for making it draw in with the vacuum device 150 which is made to feed into the above-mentioned air bag 30 the air stored in the above-mentioned air tank 146, or carries out the postscript of the air in the above-mentioned air bag 30 so that it may control the flow of air. This change-over valve 148 switches by actuation of a cylinder.

[0032] The vacuum device 150 is fixed on the above-mentioned base 16 between the arrangement location of the above-mentioned driving gear 60, and the above-mentioned lower transversal frame material 127, as shown in drawing 2 and drawing 3. This vacuum device 150 attracts the air in the air bag 30 which once expanded through the above-mentioned communication trunk 160 grade, as mentioned above. In addition, the control unit which controls this automobile collision simulation experience equipment A1 whole is installed in the location of the arbitration of the above-mentioned stand 10.

[0033] Next, the busy condition of the automobile collision simulation experience equipment A1 of the first example of the above is explained using a drawing. Before automobile collision simulation experience equipment A1 is used (initial state), it is put on the original location which the slide base 42 of a concrete supply system 40 shows to drawing 1. Therefore, the automobile operation mimicking device 20 currently arranged in the top face of this slide base 42 also exists in a original location. In this case, the coil spring 48 is in the maximum contraction condition. Moreover, the piston of the cylinder 106 of the insurance attaching part H of the insurance supporting structure 100 is in the top's condition, and it is carrying out insurance maintenance so that the above-mentioned slide base 42 may not move forward from a original location. This is the result of switching a solenoid valve 144 and operating this cylinder 106 in response to the signal from sensor 142b.

[0034] If human being 34 takes a seat on the seat 22 of the automobile operation mimicking device 20, puts seat belt equipment 24 firmly on and turns ON a starting switch 32, first, the piston of the cylinder 106 of this insurance attaching part H will carry out downward moving from the top, and the condition of insurance maintenance will be canceled. Then, this solenoid valve 144 switches to coincidence, the cylinder 70 of cylinder part CL of a driving gear 60 is operated, the cylinder attachment plate 78 of the clutch section C of the driving gear 60 currently arranged at the tip of the piston carries out retreat migration, and clutch 90b by the side of passive movement with which it has geared, and clutch 90a of a driving side separate. Therefore, this clutch section C will be in a ranging behavior condition, and this coil spring 48 is released from the maximum contraction condition, and elongates it. In connection with this, the above-mentioned slide base 42 carries out an advance skid according to a rail 14.

[0035] And if the spring bracket 50 of the above-mentioned slide base 42 contacts suppression equipment 52, the above-mentioned slide base 42 will carry out a quick stop. In this case, if the front end section of the above-mentioned slide base 42 passes through a sensor 142a top So that the recognition signal of passage may be sent to the above-mentioned solenoid valve 144 and it may expand the air bag 30 contained for the handle 28 of the automobile operation mimicking device 20 on the occasion of the quick stop in an instant The above-mentioned solenoid valve 144 switches, the cylinder of a change-over valve 148 is operated, the switch of this change-over valve 148 is performed, and the air currently stored flows from the air tank 146 of air equipment 140 to this air bag 30.

[0036] And to the quick stop and coincidence of the above-mentioned slide base 42, as shown in drawing 7, just before human being 34, air goes into the above-mentioned air bag 30, and it expands in an instant. Next, human being 34 removes this seat belt equipment 24, stands up from this seat 22, and separates from automobile collision simulation experience equipment A1. After checking balking from human being's 34 automobile collision simulation experience equipment A1, the control unit which is not illustrated is operated. Then, first, the above-mentioned solenoid valve 144 switches, the cylinder 70 of the above-mentioned cylinder part CL operates, the cylinder attachment plate 78 of the above-mentioned clutch section C currently

arranged at the tip of the piston carries out advance migration, and clutch 90b by the side of the above-mentioned passive movement and clutch 90a of the above-mentioned driving side are engaged.

[0037] Next, the drive motor 62 of the mechanical component D of the above-mentioned driving gear 60 rotates, and the clutch 90 which is interlocking through a chain 66 also rotates. Therefore, since the drum 96 which has fitted into the follower shaft 94 of the above-mentioned clutch section C also rotates, the wire 98 which followed the advance skid of the above-mentioned slide base 42, and was prolonged is rolled round. Therefore, according to rolling up of this wire 98, the above-mentioned slide base 42 retreats slowly, and returns to a original location. Moreover, retreating, the above-mentioned change-over valve 148 switches the above-mentioned air bag 30 which once expanded, the air in the above-mentioned air bag 30 is attracted by actuation of a vacuum device 150, and the contraction receipt of it is carried out. Passage of on the above-mentioned sensor 142b of the back end section of the above-mentioned slide base 42 which retreats sends the recognition signal of passage to the above-mentioned solenoid valve 144. And when the above-mentioned slide base 42 returns to a original location, the above-mentioned solenoid valve 144 switches, it stops, and further, the piston of the cylinder 106 of the above-mentioned insurance attaching part H upper-** rotation of the drive motor 62 of the mechanical component D of the above-mentioned driving gear 60, and it will be in the top's condition. Moreover, the above-mentioned coil spring 48 also returns to the maximum contraction condition.

[0038] In addition, sensor 142c will emit the recognition signal of passage, if it has the same function as the above-mentioned sensor 142b, namely, the back end section of the above-mentioned slide base 42 passes. Therefore, when the above-mentioned slide base 42 returns to a original location, by actuation of the above-mentioned solenoid valve 144, rotation of the drive motor 62 of the mechanical component D of the above-mentioned driving gear 60 stops, and the piston of the cylinder 106 of the above-mentioned insurance attaching part H is upper-**(ed), and will be in the top's condition. However, this sensor 142c operates, when the above-mentioned sensor 142b does not operate by failure at all, and it plays [that is,] a role of reserve equipment (equipment for urgent insurance). The above busy condition is repeated and is carried out continuously.

[0039] It can act calmly calmly, without according to above automobile collision simulation experience equipment A1, being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver. Moreover, with this air equipment 140, expansion contraction of an air bag can be repeated repeatedly and can be carried out.

[0040] Next, the second example is explained using drawing 8 . The automobile collision simulation experience equipment A2 of **** 2 example adds side air bag equipment 200 to the configuration of the automobile collision simulation experience equipment A1 of the first example of the above. Therefore, it has the stand 10 of the automobile collision simulation experience equipment A1 of the first example of the above, the automobile operation mimicking device 20, a concrete supply system 40, suppression equipment 52, a driving gear 60, the insurance supporting structure 100, air equipment 140, and the control unit that is not illustrated.

[0041] Here, only side air bag equipment 200 is explained. Side air bag equipment 200 has the stanchion 202, the stowage 204, and the side air bag 206. A stanchion 202 is hollow-like and is set up near the right-hand side section of the seat of the seat 22 of the automobile operation mimicking device 20 installed in the top face of the slide base 42 of a concrete supply system 40. A stowage 204 presents an oblong cube type configuration, it is attached in the point of this stanchion 202, and the side air bag 206 is contained in it. And this stowage 204 has the centrum of the above-mentioned stanchion 202, and the pore which was open for free passage, and has the structure where this side air bag 206 expands by feeding of air. The above-mentioned side air bag 206 is presenting saccate [oblong].

[0042] in addition, these arrangement of the automobile where the arrangement relation (height of side air bag equipment 200 when human being 34 sits on the distance Sagitta seat 22 between a seat 22 or a handle 28, and side air bag equipment 200 etc.) between this seat 22 or a handle 28, and side air bag equipment 200 is actual and abbreviation -- it is the same. Side air bag equipment 200 is connected to air equipment 140. Therefore, expansion contraction of a side air bag 206 is performed like an air bag 30. That is, this slide base 42 carries out an advance skid like the first example of the above according to a rail 14. And if the spring bracket 50 of the above-mentioned slide base 42 contacts suppression equipment 52, the above-mentioned slide base 42 will carry out a quick stop.

[0043] In this case, if the front end section of the above-mentioned slide base 42 passes through a sensor 142a top So that the recognition signal of passage may be sent to a solenoid valve 144 and it may expand the side air bag 206 contained to the stowage 204 of the air bag 30 contained for the handle 28 of the automobile operation mimicking device 20 on the occasion of the quick stop, and side air bag equipment 200 in an instant This solenoid valve 144 switches, the cylinder of a change-over valve 148 is operated, the switch of this change-over valve 148 is performed, and the air currently stored flows from the air tank 146 of air equipment 140 to this air bag 30 and this side air bag 206.

[0044] And to the quick stop and coincidence of the above-mentioned slide base 42, as shown in drawing 8 , just before human being 34, air goes into the above-mentioned air bag 30 and the above-mentioned side air bag 206, and it expands in an instant. Next, human being 34 removes seat belt equipment 24, stands up from the above-mentioned seat 22, and separates from automobile collision simulation experience equipment A2. After checking balking from human being's 34 automobile collision simulation experience equipment A2, the control unit which is not illustrated is operated. Like the first example of the above, although the above-mentioned slide base 42 returns to a original location, the above-mentioned change-over valve 148 switches the above-mentioned air bag 30 and the above-mentioned side air bag 206 which once expanded on that occasion, the air in the above-mentioned air bag 30 and the above-mentioned side air bag 206 is attracted, and the contraction receipt of them is carried out by actuation of a vacuum device 150, respectively. In addition, expansion of the above-mentioned air bag 30 and the above-mentioned side air bag 206 is good also as what can carry only either out.

[0045] It can act calmly calmly, without according to above automobile collision simulation experience equipment A2, being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag or side air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver. Moreover, with this air equipment 140, expansion contraction of an air bag or a side air bag can be repeated repeatedly, and can be carried out.

[0046] In addition, by this example, although the coil spring is used for a concrete supply system, the class of the coil spring may be changed suitably. Therefore, the advance planing speed of a concrete supply system is changeable into arbitration. Moreover, although each equipment to carry is installed in a predetermined location by this example, unless an operation changes, you may install to the location of arbitration. Furthermore, although this example does not explain, in order to make it risk of following on actuation of each equipment not arise, members, such as a suitable safety guard and eye hiding, may be attached.

[0047]

[Effect of the Invention] It can act calmly calmly, without according to the automobile collision simulation experience equipment according to claim 1 based on this invention, being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver. Moreover, especially, according to automobile collision simulation experience equipment according to

claim 2, expansion contraction of an air bag can be repeated repeatedly and can be carried out.

[0048] Furthermore, it can act calmly calmly, without according to automobile collision simulation experience equipment according to claim 3, being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag or side air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver. Moreover, expansion contraction of an air bag or a side air bag can be repeated repeatedly, and can be carried out.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the equipment which can carry out simulation experience of the expansion condition of an air bag just before human being especially about automobile collision simulation experience equipment in the case of an automobile collision.

PRIOR ART

[Description of the Prior Art] The automobile collision simulation experience equipment from the former was equipment which human being sits on a seat in general, and only a seat belt is made to be fastened, and a slant face is prepared [equipment], carries out natural fall of the seat, and carries out simulation experience of the impact in the case of an automobile collision.

EFFECT OF THE INVENTION

[Effect of the Invention] It can act calmly calmly, without according to the automobile collision simulation experience equipment according to claim 1 based on this invention, being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver. Moreover, especially, according to automobile collision simulation experience equipment according to claim 2, expansion contraction of an air bag can be repeated repeatedly and can be carried out.

[0048] Furthermore, it can act calmly calmly, without according to automobile collision simulation experience equipment according to claim 3, being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag or side air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver. Moreover, expansion contraction of an air bag or a side air bag can be repeated repeatedly, and can be carried out.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, the traffic-paint consciousness of a driver increases by frequent occurrence of an automobile accident in recent years, the case where a private vehicle is equipped with an air bag is increasing quickly, and further, since each automaker company has also standard-equipment-ized the air bag, with above conventional equipment, the case where the simulation of the actual automobile collision cannot be carried out completely has been produced. Moreover, in the flume with which automobile accidents occur frequently, since it can say that it is usually rare to actually encounter a motor vehicle collision, simulation experience of the expansion condition of the air bag at the time of a collision is carried out beforehand, and it is also required to train so that it may not be panicked in case of emergency. [0004] Then, it aims at providing coincidence with the automobile collision simulation experience equipment in which simulation experience is possible for the impact in the case of an automobile collision, and the condition of the air bag which expands in an instant just before human being as part of traffic-paint education. In addition, in addition to air bag equipment, the automobile equipped with the side air bag equipment which expands an air bag from human being's side also actually appears, and it aims also at offer of the equipment which can carry out simulation experience of it.

MEANS

[Means for Solving the Problem] It is created in order that this invention may solve the above-mentioned trouble. In the first place The orbit which is automobile collision simulation experience equipment and was prepared in the stand, a seat, and seat belt equipment, The automobile operation mimicking device which consists of handles which have an air bag, and the concrete supply system which makes this automobile operation mimicking device glide over this orbit top using a deformation flexible operation of a spring material, It is characterized by having the suppression equipment which inhibits elongation of this spring material, the driving gear which returns this concrete supply system even to a original location, the insurance supporting structure which makes the above-mentioned concrete supply system which returned even to the original location hold, and air equipment which enables iteration of expansion contraction of this air bag.

[0006] If human being takes a seat on the seat of an automobile operation mimicking device prepared on the concrete supply system arranged in the automobile collision simulation experience equipment of this first configuration in the original location on the orbit prepared in the stand, a seat belt puts firmly on it and a starting switch turns ON, the spring material which was in the deformation contraction condition develops, and this concrete supply system will carry out the advance skid of this orbit top. And if the tip of this spring material contacts suppression equipment, if the quick stop of the above-mentioned concrete supply system is carried out simultaneously, air equipment will operate, and the air bag which it has for the handle of this automobile operation mimicking device will expand in an instant. After human being secedes from this seat, while a driving gear operates and the above-mentioned concrete supply system returns to a original location, air equipment operates and this air bag that once expanded carries out contraction receipt. Furthermore, the insurance supporting structure works and the above-mentioned concrete supply system is certainly held in a original location at the same time the above-mentioned concrete supply system returns to a original location.

[0007] With the automobile collision simulation experience equipment of this configuration, it can act calmly calmly, without being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver.

[0008] Moreover, sequential connection of the air tank which stores the air which air equipment took in from the outside in the second in the automobile collision simulation experience equipment of the configuration of the above first, a vacuum device, the air bag which it has for the handle of an automobile operation mimicking device, and the change-over valve makes, and it is characterized by to enable iteration of expansion contraction of this air bag in response to the automatic controller arranged in the orbit over which a concrete supply system glides.

[0009] In the automobile collision simulation experience equipment of this second configuration, the automatic controller which arranged passage of a concrete supply system into orbit detects, a change-over valve switches in response to the signal which this automatic controller emitted in response to it, the air of the air tank taken in and stored from the outside is fed into the air bag which it has for the handle of an automobile operation mimicking device, and this air bag expands in an instant. And further, by switching of this change-over valve, a vacuum device operates, and is attracted, and the above-mentioned air bag carries out the contraction receipt of the air in the above-mentioned air bag which once expanded. With the automobile collision simulation experience equipment of this configuration, since air equipment has the above configurations, expansion contraction of an air bag can be repeated repeatedly and can be carried out.

[0010] Furthermore, in the automobile collision simulation experience equipment of the above-mentioned first or the second configuration, an automobile operation mimicking device is characterized by having side air bag equipment the third. In the automobile collision simulation experience equipment of this third configuration, if

a concrete supply system carries out a quick stop simultaneously, air equipment will operate, and the side air bag which it has to the air bag or side air bag equipment which it has for the handle of an automobile operation mimicking device expands in an instant. Moreover, this air equipment operates and this air bag or this side air bag which once expanded carries out contraction receipt.

[0011] With the automobile collision simulation experience equipment of this configuration, it can act calmly calmly, without being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag or side air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver. Moreover, expansion contraction of an air bag or a side air bag can be repeated repeatedly, and can be carried out.

[0012]

[Embodiment of the Invention] One example made into the gestalt of operation of this invention is explained using a drawing. First, the first example is explained from drawing 1 using drawing 7. The automobile collision simulation experience equipment A1 of an example has the control unit which is not illustrated with a stand 10, the automobile operation mimicking device 20, a concrete supply system 40, suppression equipment 52, a driving gear 60, the insurance supporting structure 100, and air equipment 140 for a start [this]. Here, the stand 10 consists of a frame 12, a rail 14 which becomes on an orbit, and the base 16.

[0013] A frame 12 is used combining shape steel material, and is formed in the cube type configuration. That is, a framework is formed in a rectangle from the lower door-post material 125 and 126 and the lower transversal frame material 127 and 128, the stanchions 131, 132, 133, and 134 of the same die length are set up in the four corners, and on the stanchion, as shown in drawing 2, a framework is formed at a rectangle from the up door-post material 121 and 122 and the up transversal frame material 123 and 124.

[0014] A rail 14 is double T steel, and the cross section presents the configuration where the migration member 44 arranged in the four corners of the inferior surface of tongue of the slide base 42 of the concrete supply system 40 which carries out a postscript can fit in, and as shown in drawing 4, it is prepared two in parallel with the up door-post material [of this frame 12] 121, and 122 top. The base 16 presents tabular and is fixed on the lower door-post material 125 and 126 of the above-mentioned frame 12, the lower transversal frame material 127, and 128. In addition, the various equipments which carry out a postscript are altogether attached in this stand 10.

[0015] Next, the automobile operation mimicking device 20 is altogether attached in the top face of the slide base 42 of the concrete supply system 40 which carries out a postscript, as shown in drawing 1. The handle stanchion 26 is hollow-like and the handle 28 which set up in the center near the front end section of the top face of the above-mentioned slide base 42, and contained the air bag 30 is attached in the point of this handle stanchion 26. A handle 28 has the centrum of the above-mentioned handle stanchion 26, and the pore which was open for free passage, and has the structure where this air bag 30 expands by feeding of air. The above-mentioned air bag 30 is attached in this handle 28, and as shown in drawing 7, it is presenting saccate [circular].

[0016] A seat 22 is installed in the center of abbreviation of the top face of the slide base 42 of the concrete supply system 40 which carries out a postscript, and the seat belt equipment 24 which puts the seat top firmly on tucking up its sleeves with a cord is arranged. Moreover, the starting switch 32 which starts the automobile collision simulation experience equipment A1 whole is formed near the left-hand side section of the seat of this seat 22. And this starting switch 32 is connected with the control unit which is not illustrated. in addition, these arrangement of the automobile where the arrangement relation (height of the handle 28 when human being sits on a seat 22 and the distance Sagitta seat 22 between handles 28 etc.) between the above-mentioned seat 22 and the above-mentioned handle 28 is actual and abbreviation -- it is the same.

[0017] Next, the concrete supply system 40 consists of a slide base 42, the migration member 44, a spring guide 46, a coil spring 48 that becomes with a spring material, and a spring bracket 50. Here, a slide base 42

presents tabular and the location shown in drawing 2 and drawing 3 is arranged as a original location. And the migration members 44 are the four corners of the inferior surface of tongue of the slide base 42, and are arranged possible [fitting] by two rails 14 laid by the above-mentioned frame 12. Moreover, the spring bracket 50 which carries out a postscript has fixed in the center of the front end section of this slide base 42. As shown in drawing 4 , a cross section is a reverse concave, among those many ball bearings are arranged in the both-sides side of a slot, and in case the migration member 44 is migration, unlike the mere roller, it has the structure which does not almost have friction with a rail 14.

[0018] The spring guide 46 presents the shape of a rod, and as shown in drawing 2 and drawing 3 , it is constructed over the center section of each of that transversal frame material through the bracket between the up transversal frame material 123 of the above-mentioned frame 12, and 124. A coil spring 48 is inserted in this spring guide 46, it is fixed to the bracket with which the end was attached on the above-mentioned up transversal frame material 124, and the point is attached in the spring bracket 50 which carries out a postscript. In addition, the usual die length of this coil spring 48 to which a load is not applied has the die length of the above-mentioned spring guide 46, and the die length of abbreviation identitas.

[0019] The spring bracket 50 presented strip-of-paper-like tabular, rather than the diameter of the above-mentioned spring guide 46, it had one pore of a major diameter a little, and was arranged in the shape of suspension in the center of the front end section of the above-mentioned slide base 42, and the above-mentioned spring guide 46 has penetrated the pore. Moreover, as shown in drawing 3 , the tip of the wire 98 twisted around the drum 96 arranged in the clutch section C of the driving gear 60 which carries out a postscript is connected with the lower limit section of this spring bracket 50.

[0020] Next, suppression equipment 52 is formed by the coil spring, as shown in drawing 2 and drawing 3 . That is, it is inserted in the above-mentioned spring guide 46, and the end is being fixed to the bracket attached on the above-mentioned up transversal frame material 123. The point contacts the above-mentioned spring bracket 50, when the above-mentioned coil spring 48 carries out the maximum elongation.

[0021] Next, the driving gear 60 has a mechanical component D, the clutch section C, and cylinder part CL. Here, as shown in drawing 2 and drawing 3 , a mechanical component D is fixed crosswise in the above-mentioned base 16 top, and consists of a drive motor 62, a sprocket 64, and a chain 66. The drive motor 62 is connected with the sprocket 84 which a sprocket 64 is arranged by the revolving shaft and it has in the clutch section C which carries out a postscript through the chain 66.

[0022] As shown in drawing 2 , cylinder part CL is fixed crosswise in the above-mentioned base 16 top, and consists of a cylinder bracket 68, a cylinder 70, and floating joint 72. As a cylinder 70 is arranged crosswise in parallel to the above-mentioned base 16 and is shown in drawing 5 (b), a cylinder case is fixed with the cylinder bracket 68, the other end is arranged so that a piston may carry out both-way rectilinear motion, and the cylinder-like floating joint 72 is inserted in the center section of the piston. Furthermore, the tip of this piston has fixed with the bracket which it has in the end side of the cylinder attachment plate 78 of the clutch section C which carries out a postscript. In addition, in response to the signal from the sensor 142 which carries out a postscript, by switching of a solenoid valve 144 which carries out a postscript, this cylinder 70 is set up so that a piston may perform both-way rectilinear motion.

[0023] Next, as it is shown in drawing 2 so that the clutch section C may make it this mechanical component D and this cylinder part CL interlocked with The above-mentioned base 16 top is fixed crosswise. The cylinder attachment plate 78, The migration member 80, a rail 82, a sprocket 84, and the fixed electrode holder 86, It consists of the drive shaft 88, a clutch 90 (the clutch by the side of 90a and passive movement is called 90b for the clutch of a driving side), the fluctuation electrode holder 92, a follower shaft 94, a drum 96, and a wire 98. Here, the cylinder attachment plate 78 presents tabular [rectangular], is attached at the tip of the piston of the above-mentioned cylinder 70 through a bracket, is interlocked with a both-way rectilinear motion of this piston, and operates.

[0024] That is, as shown in drawing 5 (b), this cylinder attachment plate 78 can move the two rail 82 top with

which four migration members 80 (migration member 44 reference explained above) were attached and laid according to a both-way rectilinear motion of the above-mentioned piston to the inferior surface of tongue. In addition, this rail 82 has the die length which can cut or connect the clutch 90 which carries out a postscript by both-way migration of the above-mentioned cylinder attachment plate 78.

[0025] As the fluctuation electrode holder 92 is shown in drawing 5 (a) and (b), it was set up by the location of the center of abbreviation of the top face of the above-mentioned cylinder attachment plate 78 in the shape of a stanchion, and the follower shaft 94 has penetrated the abbreviation center section. And fitting of a drum 96 and the clutch 90b by the side of passive movement is carried out to the both ends of this follower shaft 94. In addition, as mentioned above, the wire 98 is wound and the drum 96 has connected the tip with the lower limit section of the above-mentioned spring bracket 50. As the fixed electrode holder 86 shows drawing 5 (a) and (b) like the fluctuation electrode holder 92, the shape of a stanchion was presented, and it is the location and the opposite side in which the above-mentioned cylinder part CL was arranged, and was set up on the above-mentioned base 16 by the location on the production of the above-mentioned rail 82, and the drive shaft 88 has penetrated the abbreviation center section. And fitting of clutch 90a of a driving side and the sprocket 84 is carried out to the both ends of this drive shaft 88. In addition, the above-mentioned drive shaft 88 and the above-mentioned follower shaft 94 are arranged on the same axial center. Moreover, as shown in drawing 5 (a), this sprocket 84 is arranged on the same line as this sprocket 64 in order to connect it with the sprocket 64 arranged by the drive motor 62 of a mechanical component D through a chain 66.

[0026] Next, the insurance supporting structure 100 consists of the stopper section S and an insurance attaching part H. Here, the stopper section S has the stopper bracket 116 and the stopper 118. As are shown in drawing 3, and it is L character-like, and it is the inferior-surface-of-tongue back end section of the above-mentioned slide base 42 and it is shown in drawing 4, pair side-by-side installation of the stopper bracket 116 is carried out inside the above-mentioned migration member 44 currently arranged. A stopper 118 presents the shape of a bolt, as shown in drawing 3 and drawing 4, and buffer members, such as rubber, are attached in the end side. And this stopper bracket 116 is penetrated and it is prepared.

[0027] The insurance attaching part H has the attaching part bracket 102, a slide guide 104, a cylinder 106, the floating joint 108, bearing 110, the shaft 112, and the roller follower 114. As the attaching part bracket 102 is shown in drawing 2 and drawing 3, it is L character-like, and has a rib plate in a back backside, and the slide guide 104 which becomes outside the U shape which guides a both-way rectilinear motion of the piston of a cylinder 106 is attached in the before side upper part. And when the above-mentioned slide base 42 is in a original location, this attaching part bracket 102 is fixed on the location immediately before this stopper's 118 buffer member on the above-mentioned base 16.

[0028] As a cylinder 106 is shown in drawing 3, when the above-mentioned slide base 42 is in a original location, between the above-mentioned attaching part bracket 102 and the above-mentioned stopper's 118 buffer member, a cylinder case side is arranged on the above-mentioned base 16, and the piston carries out both-way rectilinear motion in the direction of a vertical. The cylinder-like floating joint 108 is inserted in the pars intermedia, and, as for this piston, the U-shaped bearing 110 is further arranged at the tip. And a shaft 112 penetrates the roller follower 114 and is arranged by this bearing 110. The above-mentioned roller follower 114 is arranged on the locus of the above-mentioned stopper 118 which the above-mentioned stopper 118 and this roller follower 114 are the height level whose contact is attained when the top has the piston of this cylinder 106, and moves according to migration of the above-mentioned slide base 42. In addition, in response to the signal from the sensor 142 which carries out a postscript, by switching of a solenoid valve 144 which carries out a postscript, the above-mentioned cylinder 106 is set up so that a piston may perform both-way rectilinear motion.

[0029] Next, air equipment 140 consists of the sensor 142 which becomes with an automatic controller, the solenoid valve 144 which becomes by the change-over valve, an air tank 146, the change-over valve 148 which has a cylinder, a vacuum device 150, the air intake 152, a filter regulator 154, a pressure switch 156,

and communication trunks 158 and 160, as shown in drawing 6 . Here, a sensor 142 is the medial surface of the up door-post material 122 of the above-mentioned frame 12, and as shown in drawing 2 , it is formed three places in order of 142a, 142b, and 142c toward the above-mentioned up transversal frame material 124 from the above-mentioned up transversal frame material 123. That is, sensor 142a is arranged in the front location rather than the front end section of the above-mentioned slide base 42 in a original location. Moreover, Sensors 142b and 142c are arranged in the location which can detect the original location of the above-mentioned slide base 42, respectively.

[0030] A solenoid valve 144 is connected with each cylinder so that it may operate the cylinder which it connects [cylinder] with this sensor 142, and operates the cylinder 70 of cylinder part CL of the above-mentioned driving gear 60, the cylinder 106 of the insurance attaching part H of the above-mentioned insurance supporting structure 100, and the change-over valve 148 that carries out a postscript. An air tank 146 presents an approximate circle column configuration, and as shown in drawing 2 and drawing 3 , it is fixed on the above-mentioned base 16 between the arrangement location of the above-mentioned insurance attaching part H, and the above-mentioned lower transversal frame material 128. According to actuation of the change-over valve 148 to which this air tank 146 stores and carries out the postscript of the air temporarily, the stored air is fed into the air bag 30 contained for the handle 28 through the pipe-like communication trunk 160 and the handle stanchion 26 of the above-mentioned automobile operation mimicking device 20, and expands this in an instant. Moreover, the air intake 152, the filter regulator 154, a pressure switch 156, and the above-mentioned air tank 146 are the pipe-like communication trunks 158, and sequential connection is made.

[0031] Here, the filter regulator 154 is for removing the impurity contained in the air taken in from this air intake 152. Moreover, a pressure switch 156 is for adjusting the pressure of the taken-in air. Moreover, the handle stanchion 26 of the above-mentioned air tank 146, a change-over valve 148, a vacuum device 150, and the above-mentioned automobile operation mimicking device 20 is this communication trunk 160, and sequential connection is made. A change-over valve 148 is a circuit changing switch for making it draw in with the vacuum device 150 which is made to feed into the above-mentioned air bag 30 the air stored in the above-mentioned air tank 146, or carries out the postscript of the air in the above-mentioned air bag 30 so that it may control the flow of air. This change-over valve 148 switches by actuation of a cylinder.

[0032] The vacuum device 150 is fixed on the above-mentioned base 16 between the arrangement location of the above-mentioned driving gear 60, and the above-mentioned lower transversal frame material 127, as shown in drawing 2 and drawing 3 . This vacuum device 150 attracts the air in the air bag 30 which once expanded through the above-mentioned communication trunk 160 grade, as mentioned above. In addition, the control unit which controls this automobile collision simulation experience equipment A1 whole is installed in the location of the arbitration of the above-mentioned stand 10.

[0033] Next, the busy condition of the automobile collision simulation experience equipment A1 of the first example of the above is explained using a drawing. Before automobile collision simulation experience equipment A1 is used (initial state), it is put on the original location which the slide base 42 of a concrete supply system 40 shows to drawing 1 . Therefore, the automobile operation mimicking device 20 currently arranged in the top face of this slide base 42 also exists in a original location. In this case, the coil spring 48 is in the maximum contraction condition. Moreover, the piston of the cylinder 106 of the insurance attaching part H of the insurance supporting structure 100 is in the top's condition, and it is carrying out insurance maintenance so that the above-mentioned slide base 42 may not move forward from a original location. This is the result of switching a solenoid valve 144 and operating this cylinder 106 in response to the signal from sensor 142b.

[0034] If human being 34 takes a seat on the seat 22 of the automobile operation mimicking device 20, puts seat belt equipment 24 firmly on and turns ON a starting switch 32, first, the piston of the cylinder 106 of this insurance attaching part H will carry out downward moving from the top, and the condition of insurance

maintenance will be canceled. Then, this solenoid valve 144 switches to coincidence, the cylinder 70 of cylinder part CL of a driving gear 60 is operated, the cylinder attachment plate 78 of the clutch section C of the driving gear 60 currently arranged at the tip of the piston carries out retreat migration, and clutch 90b by the side of passive movement with which it has geared, and clutch 90a of a driving side separate. Therefore, this clutch section C will be in a ranging behavior condition, and this coil spring 48 is released from the maximum contraction condition, and elongates it. In connection with this, the above-mentioned slide base 42 carries out an advance skid according to a rail 14.

[0035] And if the spring bracket 50 of the above-mentioned slide base 42 contacts suppression equipment 52, the above-mentioned slide base 42 will carry out a quick stop. In this case, if the front end section of the above-mentioned slide base 42 passes through a sensor 142a top So that the recognition signal of passage may be sent to the above-mentioned solenoid valve 144 and it may expand the air bag 30 contained for the handle 28 of the automobile operation mimicking device 20 on the occasion of the quick stop in an instant The above-mentioned solenoid valve 144 switches, the cylinder of a change-over valve 148 is operated, the switch of this change-over valve 148 is performed, and the air currently stored flows from the air tank 146 of air equipment 140 to this air bag 30.

[0036] And to the quick stop and coincidence of the above-mentioned slide base 42, as shown in drawing 7 , just before human being 34, air goes into the above-mentioned air bag 30, and it expands in an instant. Next, human being 34 removes this seat belt equipment 24, stands up from this seat 22, and separates from automobile collision simulation experience equipment A1. After checking balking from human being's 34 automobile collision simulation experience equipment A1, the control unit which is not illustrated is operated. Then, first, the above-mentioned solenoid valve 144 switches, the cylinder 70 of the above-mentioned cylinder part CL operates, the cylinder attachment plate 78 of the above-mentioned clutch section C currently arranged at the tip of the piston carries out advance migration, and clutch 90b by the side of the above-mentioned passive movement and clutch 90a of the above-mentioned driving side are engaged.

[0037] Next, the drive motor 62 of the mechanical component D of the above-mentioned driving gear 60 rotates, and the clutch 90 which is interlocking through a chain 66 also rotates. Therefore, since the drum 96 which has fitted into the follower shaft 94 of the above-mentioned clutch section C also rotates, the wire 98 which followed the advance skid of the above-mentioned slide base 42, and was prolonged is rolled round. Therefore, according to rolling up of this wire 98, the above-mentioned slide base 42 retreats slowly, and returns to a original location. Moreover, retreating, the above-mentioned change-over valve 148 switches the above-mentioned air bag 30 which once expanded, the air in the above-mentioned air bag 30 is attracted by actuation of a vacuum device 150, and the contraction receipt of it is carried out. Passage of on the above-mentioned sensor 142b of the back end section of the above-mentioned slide base 42 which retreats sends the recognition signal of passage to the above-mentioned solenoid valve 144. And when the above-mentioned slide base 42 returns to a original location, the above-mentioned solenoid valve 144 switches, it stops, and further, the piston of the cylinder 106 of the above-mentioned insurance attaching part H upper-** rotation of the drive motor 62 of the mechanical component D of the above-mentioned driving gear 60, and it will be in the top's condition. Moreover, the above-mentioned coil spring 48 also returns to the maximum contraction condition.

[0038] In addition, sensor 142c will emit the recognition signal of passage, if it has the same function as the above-mentioned sensor 142b, namely, the back end section of the above-mentioned slide base 42 passes. Therefore, when the above-mentioned slide base 42 returns to a original location, by actuation of the above-mentioned solenoid valve 144, rotation of the drive motor 62 of the mechanical component D of the above-mentioned driving gear 60 stops, and the piston of the cylinder 106 of the above-mentioned insurance attaching part H is upper-**(ed), and will be in the top's condition. However, this sensor 142c operates, when the above-mentioned sensor 142b does not operate by failure at all, and it plays [that is,] a role of reserve equipment (equipment for urgent insurance). The above busy condition is repeated and is carried out

continuously.

[0039] It can act calmly calmly, without according to above automobile collision simulation experience equipment A1, being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver. Moreover, with this air equipment 140, expansion contraction of an air bag can be repeated repeatedly and can be carried out.

[0040] Next, the second example is explained using drawing 8. The automobile collision simulation experience equipment A2 of **** 2 example adds side air bag equipment 200 to the configuration of the automobile collision simulation experience equipment A1 of the first example of the above. Therefore, it has the stand 10 of the automobile collision simulation experience equipment A1 of the first example of the above, the automobile operation mimicking device 20, a concrete supply system 40, suppression equipment 52, a driving gear 60, the insurance supporting structure 100, air equipment 140, and the control unit that is not illustrated.

[0041] Here, only side air bag equipment 200 is explained. Side air bag equipment 200 has the stanchion 202, the stowage 204, and the side air bag 206. A stanchion 202 is hollow-like and is set up near the right-hand side section of the seat of the seat 22 of the automobile operation mimicking device 20 installed in the top face of the slide base 42 of a concrete supply system 40. A stowage 204 presents an oblong cube type configuration, it is attached in the point of this stanchion 202, and the side air bag 206 is contained in it. And this stowage 204 has the centrum of the above-mentioned stanchion 202, and the pore which was open for free passage, and has the structure where this side air bag 206 expands by feeding of air. The above-mentioned side air bag 206 is presenting saccate [oblong].

[0042] in addition, these arrangement of the automobile where the arrangement relation (height of side air bag equipment 200 when human being 34 sits on the distance Sagitta seat 22 between a seat 22 or a handle 28, and side air bag equipment 200 etc.) between this seat 22 or a handle 28, and side air bag equipment 200 is actual and abbreviation -- it is the same. Side air bag equipment 200 is connected to air equipment 140. Therefore, expansion contraction of a side air bag 206 is performed like an air bag 30. That is, this slide base 42 carries out an advance skid like the first example of the above according to a rail 14. And if the spring bracket 50 of the above-mentioned slide base 42 contacts suppression equipment 52, the above-mentioned slide base 42 will carry out a quick stop.

[0043] In this case, if the front end section of the above-mentioned slide base 42 passes through a sensor 142a top So that the recognition signal of passage may be sent to a solenoid valve 144 and it may expand the side air bag 206 contained to the stowage 204 of the air bag 30 contained for the handle 28 of the automobile operation mimicking device 20 on the occasion of the quick stop, and side air bag equipment 200 in an instant This solenoid valve 144 switches, the cylinder of a change-over valve 148 is operated, the switch of this change-over valve 148 is performed, and the air currently stored flows from the air tank 146 of air equipment 140 to this air bag 30 and this side air bag 206.

[0044] And to the quick stop and coincidence of the above-mentioned slide base 42, as shown in drawing 8, just before human being 34, air goes into the above-mentioned air bag 30 and the above-mentioned side air bag 206, and it expands in an instant. Next, human being 34 removes seat belt equipment 24, stands up from the above-mentioned seat 22, and separates from automobile collision simulation experience equipment A2. After checking balking from human being's 34 automobile collision simulation experience equipment A2, the control unit which is not illustrated is operated. Like the first example of the above, although the above-mentioned slide base 42 returns to a original location, the above-mentioned change-over valve 148 switches the above-mentioned air bag 30 and the above-mentioned side air bag 206 which once expanded on that occasion, the air in the above-mentioned air bag 30 and the above-mentioned side air bag 206 is attracted, and the contraction receipt of them is carried out by actuation of a vacuum device 150, respectively. In addition,

expansion of the above-mentioned air bag 30 and the above-mentioned side air bag 206 is good also as what can carry only either out.

[0045] It can act calmly calmly, without according to above automobile collision simulation experience equipment A2, being beforehand, thrown into confusion over the impact and coincidence in the case of an automobile collision also in case of an emergency motor vehicle collision, since simulation experience of the condition of the air bag or side air bag which expands in an instant just before human being can be carried out. And it leads also to raising of the traffic-paint consciousness of a driver. Moreover, with this air equipment 140, expansion contraction of an air bag or a side air bag can be repeated repeatedly, and can be carried out.

[0046] In addition, by this example, although the coil spring is used for a concrete supply system, the class of the coil spring may be changed suitably. Therefore, the advance planing speed of a concrete supply system is changeable into arbitration. Moreover, although each equipment to carry is installed in a predetermined location by this example, unless an operation changes, you may install to the location of arbitration. Furthermore, although this example does not explain, in order to make it risk of following on actuation of each equipment not arise, members, such as a suitable safety guard and eye hiding, may be attached.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the perspective view showing the automobile collision simulation experience equipment of the first example based on this invention.

[Drawing 2] It is the plane explanatory view showing the automobile collision simulation experience equipment except the automobile operation mimicking device and slide base of the first example based on this invention.

[Drawing 3] It is the explanatory view of the side face which fractures and shows a part of automobile collision simulation experience equipment except the automobile operation mimicking device of the first example based on this invention.

[Drawing 4] It is the B-B sectional view of drawing 2.

[Drawing 5] They are the top view in which (a) of the first example based on this invention fractures and shows a part of driving gear, and the side elevation which (b) fractures a part of driving gear, and is shown.

[Drawing 6] It is the connection relation Fig. of the air equipment of the first example based on this invention.

[Drawing 7] It is the explanatory view showing the busy condition of the automobile collision simulation experience equipment of the first example based on this invention.

[Drawing 8] It is the explanatory view showing the busy condition of the automobile collision simulation experience equipment of the second example based on this invention.

[Description of Notations]

10 Stand

14 Rail

20 Automobile Operation Mimicking Device

22 Seat

24 Seat Belt Equipment

28 Handle

30 Air Bag

40 Concrete Supply System

48 Coil Spring

52 Suppression Equipment

60 Driving Gear

100 Insurance Supporting Structure

140 Air Equipment

142 Sensor

144 Solenoid Valve

146 Air Tank

148 Change-over Valve

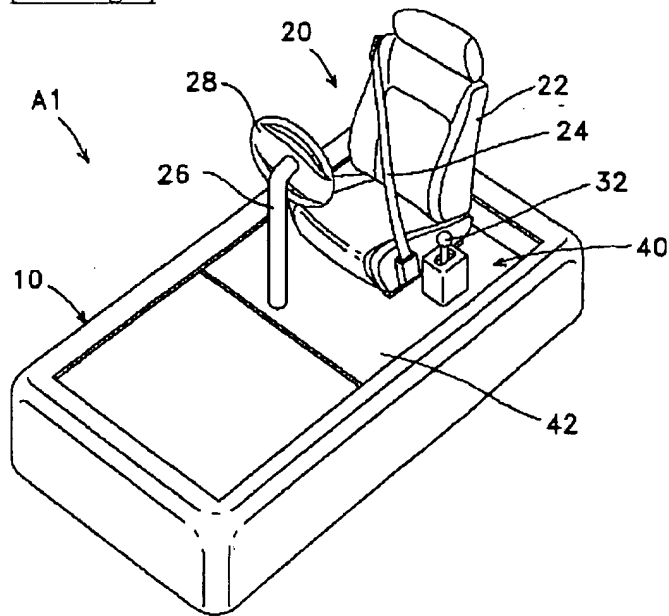
150 Vacuum Device

200 Side Air Bag Equipment

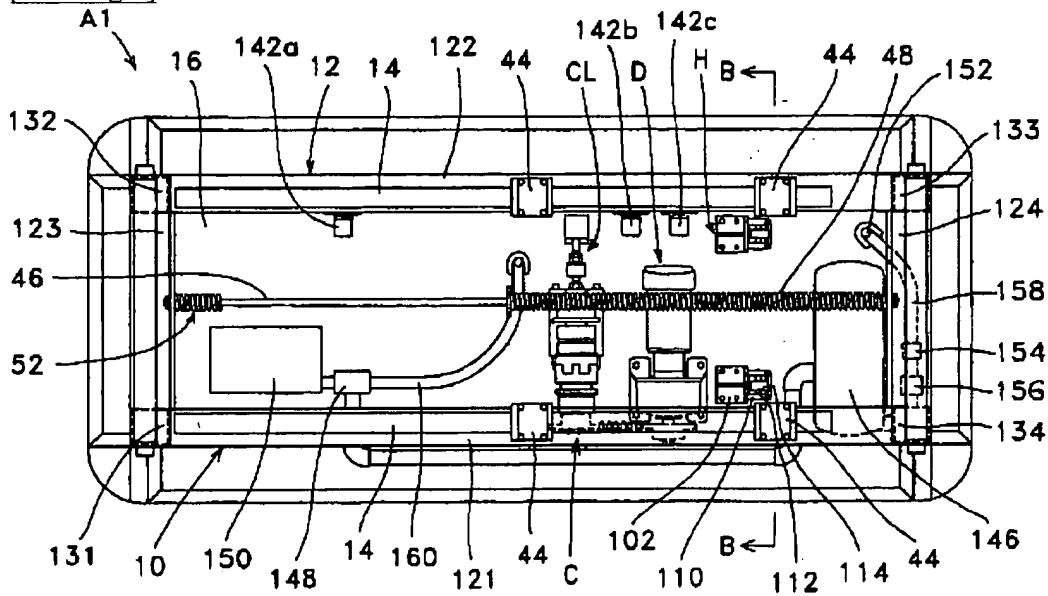
A1, A2 Automobile collision simulation experience equipment

DRAWINGS

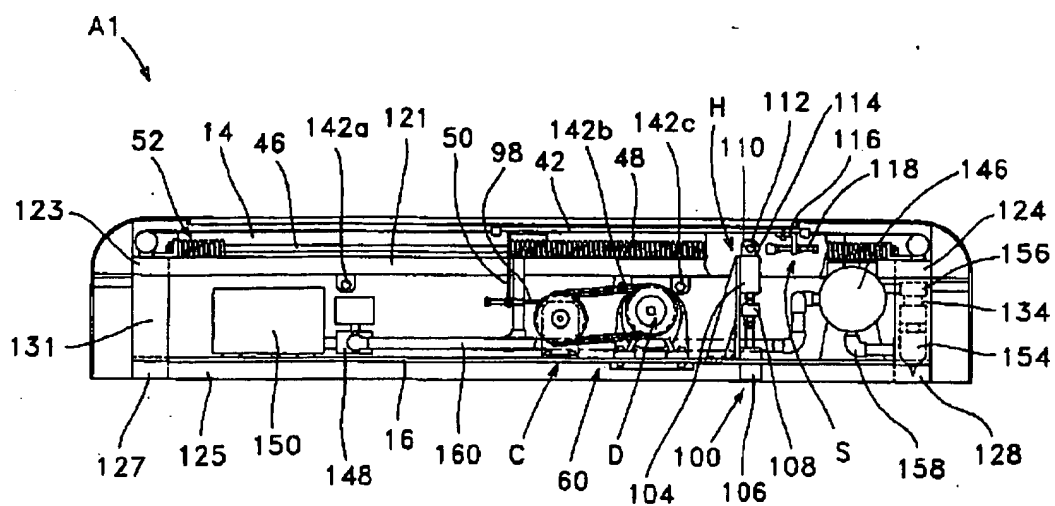
[Drawing 1]



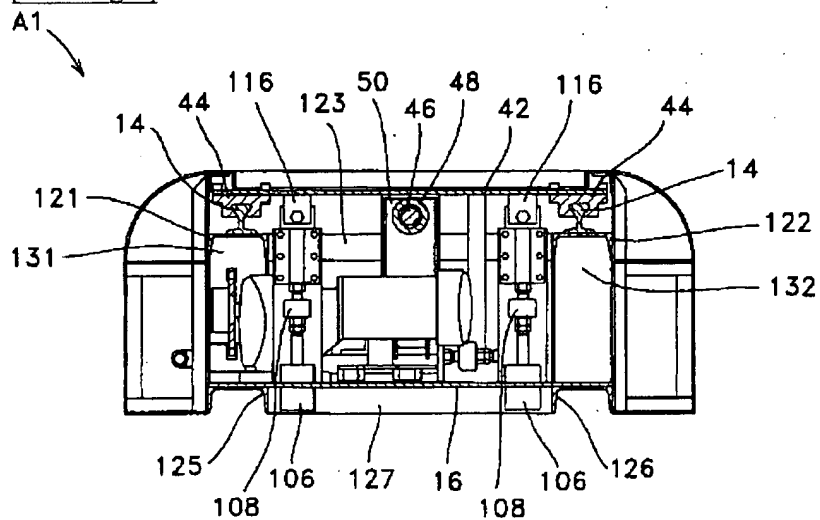
[Drawing 2]



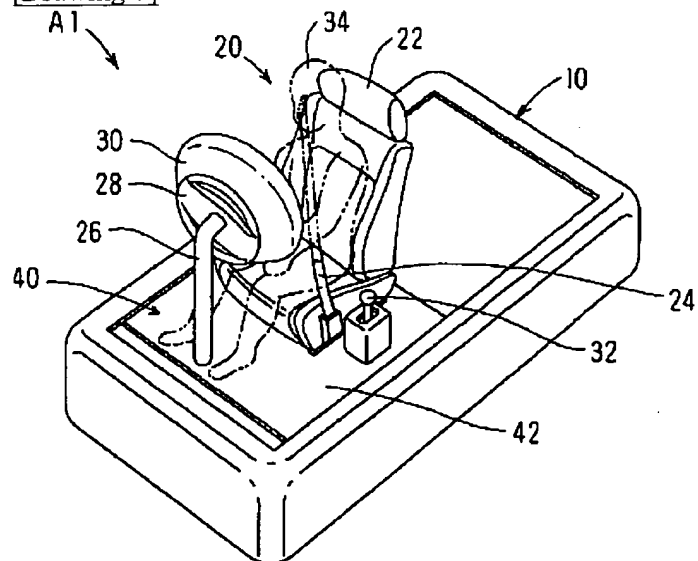
[Drawing 3]

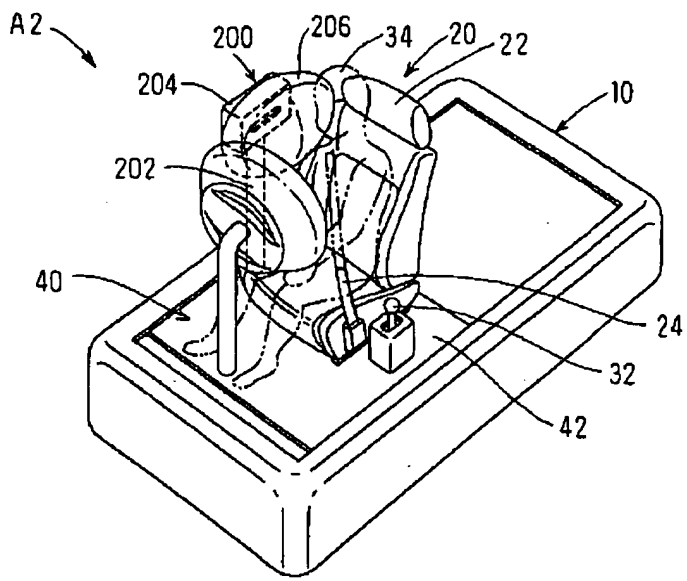


[Drawing 4]



[Drawing 7]





(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平10-20764

(43) 公開日 平成10年(1998) 1月23日

(51) Int.Cl.*	識別記号	庁内整理番号	F I	技術表示箇所
G 0 9 B	9/04		G 0 9 B 9/04	A
B 6 0 R	21/26		B 6 0 R 21/26	
G 0 1 M	17/00		G 0 1 M 17/00	Z

審査請求 未請求 請求項の数3 F D (全 11 頁)

(21) 出願番号 特願平8-188427
(22) 出願日 平成8年(1996) 6月28日

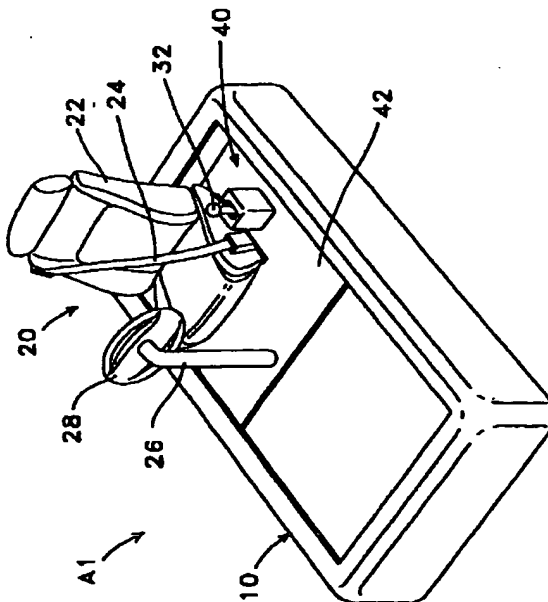
(71) 出願人 596104751
イマノ産業株式会社
愛知県豊田市豊栄町6丁目35番地
(72) 発明者 橋口 啓介
愛知県知立市山町大林19番地13
(72) 発明者 鈴木 孝司
愛知県岡崎市伊賀町字東郷中55番地
(74) 代理人 弁理士 長屋 文雄 (外1名)

(54) 【発明の名称】 自動車衝突模擬体験装置

(57) 【要約】

【課題】 自動車衝突の際の衝撃と、人間の直前に、瞬時に膨脹するエアバッグの状態とを同時に模擬体験可能な自動車衝突模擬体験装置を提供することを目的とする。

【解決手段】 架台10に設けたレール14と、エアバッグ30を有する自動車運転模擬装置20と、コイルスプリング48の変形伸縮作用を利用してレール14上を滑走させる、自動車運転模擬装置20を載設した移送装置40と、抑止装置52と、移送装置40を原位置にまで復帰させる駆動装置60と、原位置にまで復帰した移送装置40を保持させる安全保持装置100と、エアバッグ30の膨脹収縮を反復可能とするエア装置140とにより自動車衝突模擬体験装置A1を構成する。



1

【特許請求の範囲】

【請求項1】 架台に設けた軌道と、
座席と、シートベルト装置と、エアバッグを有するハンドルで構成される自動車運転模擬装置と、
該自動車運転模擬装置を弾性材料の変形伸縮作用を利用して該軌道上を滑走させる移送装置と、
該弾性材料の伸張を抑止する抑止装置と、
該移送装置を原位置にまで復帰させる駆動装置と、
原位置にまで復帰した上記移送装置を保持させる安全保持装置と、
該エアバッグの膨脹収縮を反復可能とするエア装置とを有することを特徴とする自動車衝突模擬体験装置。

【請求項2】 エア装置が、
外部から取り入れたエアを蓄えるエアタンクと、
バキューム装置と、
自動車運転模擬装置のハンドルに有するエアバッグと、
切換弁とを順次接続し、
移送装置が滑走する軌道に配設した自動制御機器に反応して、該エアバッグの膨脹収縮を反復可能としたことを特徴とする請求項1記載の自動車衝突模擬体験装置。

【請求項3】 自動車運転模擬装置が、
サイドエアバッグ装置を有することを特徴とする請求項1又は2記載の自動車衝突模擬体験装置。

【0001】

【発明の詳細な説明】

【発明の属する技術分野】本発明は、自動車衝突模擬体験装置に関するものであり、特に、自動車衝突の際に、人間の直前にエアバッグの膨脹状態を模擬体験することができる装置に関するものである。

【0002】

【従来の技術】従来からの自動車衝突模擬体験装置は、おおむね座席に人間が座り、シートベルトのみを締めさせ、斜面を設けてその座席を自然落下させ、自動車衝突の際の衝撃を模擬体験させる装置であった。

【0003】

【発明が解決しようとする課題】しかし、近年の自動車事故の多発によりドライバーの交通安全意識が高まり、自家用車にエアバッグを装着する場合が急速に増加しつつあるし、さらに、自動車メーカー各社もエアバッグを標準装備化しつつあるため、上記の従来装置では、現実の自動車衝突を完全にシミュレーションできない場合を生じている。また、自動車事故が多発するといっても、通常、実際に自動車衝突事故に遭遇するのは稀と言えるため、あらかじめ衝突時のエアバッグの膨脹状態を模擬体験しておき、いざという時にあわてることがないよう訓練することも必要である。

【0004】そこで、交通安全教育の一環として、自動車衝突の際の衝撃と、人間の直前に瞬時に膨脹するエアバッグの状態とを同時に模擬体験可能な自動車衝突模擬体験装置を提供することを目的とする。なお、エアバッ

2

グ装置に加えて、人間の側方よりエアバッグを膨脹させる、サイドエアバッグ装置を装備する自動車も実際に現れ、それを模擬体験することができる装置の提供をも目的とする。

【0005】

【課題を解決するための手段】本発明は上記問題点を解決するために創作されたものであって、第一には、自動車衝突模擬体験装置であって、架台に設けた軌道と、座席と、シートベルト装置と、エアバッグを有するハンドルで構成される自動車運転模擬装置と、該自動車運転模擬装置を弾性材料の変形伸縮作用を利用して該軌道上を滑走させる移送装置と、該弾性材料の伸張を抑止する抑止装置と、該移送装置を原位置にまで復帰させる駆動装置と、原位置にまで復帰した上記移送装置を保持させる安全保持装置と、該エアバッグの膨脹収縮を反復可能とするエア装置とを有することを特徴とするものである。

【0006】この第一の構成の自動車衝突模擬体験装置においては、架台に設けられた軌道上の原位置に配置された移送装置上に設けられた自動車運転模擬装置の座席に、人間が着席し、シートベルトを締着して、始動スイッチをオンにすると、変形収縮状態となっていた弾性材料が伸張し、該移送装置が該軌道上を前進滑走する。そして、該弾性材料の先端が抑止装置と当接すると、上記移送装置は急停止すると同時に、エア装置が作動し、該自動車運転模擬装置のハンドルに有するエアバッグが瞬時に膨脹する。人間が該座席から離脱した後、駆動装置が作動し、上記移送装置が原位置に復帰するとともに、エア装置が作動し、一旦膨脹した該エアバッグは収縮収納する。さらに、上記移送装置が原位置に復帰すると同時に、安全保持装置が働き、上記移送装置は原位置に確実に保持される。

【0007】本構成の自動車衝突模擬体験装置では、あらかじめ自動車衝突の際の衝撃と同時に、人間の直前に、瞬時に膨脹するエアバッグの状態を模擬体験することができるので、万一の自動車衝突事故の際にも周章狼狽することなく、沉着冷静に行動することができるようになる。そして、ドライバーの交通安全意識の高揚にもつながる。

【0008】また、第二には、上記第一の構成の自動車衝突模擬体験装置において、エア装置が、外部から取り入れたエアを蓄えるエアタンクと、バキューム装置と、自動車運転模擬装置のハンドルに有するエアバッグと、切換弁とを順次接続し、移送装置が滑走する軌道に配設した自動制御機器に反応して、該エアバッグの膨脹収縮を反復可能としたことを特徴とするものである。

【0009】この第二の構成の自動車衝突模擬体験装置においては、移送装置の通過を軌道に配設した自動制御機器が検知し、それに反応して該自動制御機器が発した信号を受けて、切換弁がスイッチし、外部から取り入れ蓄えたエアタンクのエアが、自動車運転模擬装置のハン

ドルに有するエアバッグへ送給され、該エアバッグが瞬時に膨脹する。そして、一旦膨脹した上記エアバッグ内のエアは、さらに、該切換弁のスイッチングにより、バキューム装置が作動し吸引され、上記エアバッグが収縮収納する。本構成の自動車衝突模擬体験装置では、エア装置が上記のような構成を有しているため、エアバッグの膨脹収縮を何度も反復して実施することができる。

【0010】さらに、第三には、上記第一又は第二の構成の自動車衝突模擬体験装置において、自動車運転模擬装置が、サイドエアバッグ装置を有することを特徴とするものである。この第三の構成の自動車衝突模擬体験装置においては、移送装置が急停止すると同時に、エア装置が作動し、自動車運転模擬装置のハンドルに有するエアバッグ又はサイドエアバッグ装置に有するサイドエアバッグが瞬時に膨脹する。また、該エア装置が作動し、一旦膨脹した該エアバッグ又は該サイドエアバッグが収縮収納する。

【0011】本構成の自動車衝突模擬体験装置では、あらかじめ自動車衝突の際の衝撃と同時に、人間の直前に、瞬時に膨脹するエアバッグ又はサイドエアバッグの状態を模擬体験することができるので、万一の自動車衝突事故の際にも周章狼狽することなく、沈着冷静に行動することができるようになる。そして、ドライバーの交通安全意識の高揚にもつながる。また、エアバッグ又はサイドエアバッグの膨脹収縮を何度も反復して実施することができる。

【0012】

【発明の実施の形態】本発明の実施の形態として一具体例を図面を利用して説明する。まず、第一具体例を図1から図7を利用して説明する。本第一具体例の自動車衝突模擬体験装置A1は、架台10と、自動車運転模擬装置20と、移送装置40と、抑止装置52と、駆動装置60と、安全保持装置100と、エア装置140と、図示しない制御装置とを有している。ここで、架台10は、フレーム12と、軌道でなるレール14と、ベース16とから構成されている。

【0013】フレーム12は、形鋼材を組み合わせて使用し、箱形状に形成されている。すなわち、下部縦枠材125、126と、下部横枠材127、128とから長方形に枠組みを形成し、その四隅に同一の長さの支柱131、132、133、134を立設し、その支柱上に、図2に示すように、上部縦枠材121、122と上部横枠材123、124とより長方形に枠組みを形成する。

【0014】レール14は、I形鋼であって、かつ、その断面が、後記する移送装置40のスライドベース42の下面の四隅に配設された移動部材44が嵌合可能な形状を呈し、図4に示すように、該フレーム12の上部縦枠材121及び122上に、平行して2本設けられている。ベース16は、板状を呈し、上記フレーム12の下

部縦枠材125、126、下部横枠材127、128上に、載設されている。なお、後記する各種装置は、この架台10にすべて取り付けられる。

【0015】次に、自動車運転模擬装置20は、図1に示すように、後記する移送装置40のスライドベース42の上面にすべて取り付けられている。ハンドル支柱26は、中空状であって、上記スライドベース42の上面の前端部近傍の中央に立設し、エアバッグ30を収納したハンドル28は、該ハンドル支柱26の先端部に取り付けられている。ハンドル28は、上記ハンドル支柱26の中空部と連通した孔部を有し、エアの送給により該エアバッグ30が膨脹する構造となっている。上記エアバッグ30は、該ハンドル28に取り付けられ、図7に示すように、円形の袋状を呈している。

【0016】座席22は、後記する移送装置40のスライドベース42の上面の略中央に設置され、その座席上をたすき掛けに締着するシートベルト装置24が配設されている。また、自動車衝突模擬体験装置A1全体を始動させる始動スイッチ32は、該座席22の座部の左側部近傍に設けられている。そして、この始動スイッチ32は図示しない制御装置と接続している。なお、上記座席22と上記ハンドル28との配置関係（座席22とハンドル28間の距離や座席22に人間が座った場合のハンドル28の高さ等）は、実際の自動車のこれらの配置と略同一となっている。

【0017】次に、移送装置40は、スライドベース42と、移動部材44と、スプリングガイド46と、弾性材料でなるコイルスプリング48と、スプリングブラケット50とから構成されている。ここで、スライドベース42は、板状を呈し、図2及び図3に示す位置を原位置として配置されている。そして、移動部材44が、そのスライドベース42の下面の四隅であって、上記フレーム12に敷設された2本のレール14に嵌合可能に配設されている。また、後記するスプリングブラケット50が、該スライドベース42の前端部中央に固着されている。移動部材44は、図4に示すように、断面が逆凹状であって、その内溝の両側面にはボールベアリングが多数配設され、単なるローラと異なり、移送の際、レール14との摩擦がほとんどない構造を有している。

【0018】スプリングガイド46は、棒状を呈し、図2及び図3に示すように、上記フレーム12の上部横枠材123と124間で、その各横枠材の中央部にブラケットを介して架設されている。コイルスプリング48は、該スプリングガイド46に嵌入され、その末端部が上記上部横枠材124上に取り付けられたブラケットに固定され、その先端部は後記するスプリングブラケット50に取り付けられている。なお、荷重をかけない該コイルスプリング48の通常の高さは、上記スプリングガイド46の長さと同様の長さを有している。

【0019】スプリングブラケット50は、短冊状の板

5

状を呈し、上記スプリングガイド46の直径よりも若干大径の孔部を一つ有し、上記スライドベース42の前端部中央で懸吊状に配設され、その孔部を上記スプリングガイド46が貫通している。また、図3に示すように、後記する駆動装置60のクラッチ部Cに配設されたドラム96に巻き付けられたワイヤー98の先端は、該スプリングブラケット50の下端部と接続されている。

【0020】次に、抑止装置52は、図2及び図3に示すように、コイルスプリングで形成されている。すなわち、上記スプリングガイド46に嵌入され、その末端部は上記上部横棒材123上に取り付けられたブラケットに固定されている。その先端部は、上記コイルスプリング48が最大伸張したときに、上記スプリングブラケット50と当接する。

【0021】次に、駆動装置60は、駆動部Dと、クラッチ部Cと、シリンダ部CLとを有している。ここで、駆動部Dは、図2及び図3に示すように、上記ベース16上を幅方向に載設され、駆動モータ62と、スプロケット64と、チェーン66とから構成されている。駆動モータ62は、その回転軸にスプロケット64が配設され、後記するクラッチ部Cに有するスプロケット84と、チェーン66を介して連結されている。

【0022】シリンダ部CLは、図2に示すように、上記ベース16上を幅方向に載設され、シリンダブラケット68と、シリンダ70と、フローティングジョイント72とから構成されている。シリンダ70は、幅方向へ上記ベース16に対し平行に配設され、図5(b)に示すように、シリンダケースがシリンダブラケット68で固定され、その他端は、ピストンが往復直線運動をするべく配置され、そのピストンの中央部に円筒状のフローティングジョイント72が嵌入されている。さらに、該ピストンの先端は、後記するクラッチ部Cのシリンダ取付プレート78の一端側に有するブラケットと固着している。なお、該シリンダ70は、後記するセンサー142からの信号を受けて、後記する電磁弁144のスイッチングにより、ピストンが往復直線運動を行うように設定されている。

【0023】次に、クラッチ部Cは、該駆動部D及び該シリンダ部CLと連動させるべく、図2に示すように、上記ベース16上を幅方向に載設され、シリンダ取付プレート78と、移動部材80と、レール82と、スプロケット84と、固定ホルダー86と、駆動シャフト88と、クラッチ90（駆動側のクラッチを90a、被動側のクラッチを90bと称する）と、変動ホルダー92と、従動シャフト94と、ドラム96と、ワイヤー98とから構成されている。ここで、シリンダ取付プレート78は、長方形の板状を呈し、上記シリンダ70のピストンの先端にブラケットを介して取り付けられ、該ピストンの往復直線運動と連動して作動する。

【0024】すなわち、図5(b)に示すように、該シ

6

リンダ取付プレート78は、その下面に4個の移動部材80（上記に説明した移動部材44参照）が取り付けられ、敷設された2本のレール82上を上記ピストンの往復直線運動に応じて移動することができる。なお、該レール82は、上記シリンダ取付プレート78の往復移動により、後記するクラッチ90を切ったり繋いだりすることができる長さを有している。

【0025】変動ホルダー92は、図5(a)、(b)に示すように、上記シリンダ取付プレート78の上面の略中央の位置に、支柱状に立設され、その略中央部を従動シャフト94が貫通している。そして、該従動シャフト94の両端に、ドラム96と被動側のクラッチ90bとが嵌合されている。なお、上述したように、ドラム96は、ワイヤー98が巻回されており、その先端は、上記スプリングブラケット50の下端部と接続している。固定ホルダー86は、変動ホルダー92と同様、図5(a)、(b)に示すように、支柱状を呈し、上記シリンダ部CLが配設された位置と反対側で、上記レール82の延長線上の位置に、上記ベース16上に立設され、その略中央部を駆動シャフト88が貫通している。そして、該駆動シャフト88の両端に、駆動側のクラッチ90aとスプロケット84とが嵌合されている。なお、上記駆動シャフト88と上記従動シャフト94は、同一軸心上に配設されている。また、図5(a)に示すように、該スプロケット84は、駆動部Dの駆動モータ62に配設されたスプロケット64と、チェーン66を介して連結するべく、該スプロケット64と同一線上に配設されている。

【0026】次に、安全保持装置100は、ストッパー部Sと、安全保持部Hとから構成されている。ここで、ストッパー部Sは、ストッパーブラケット116と、ストッパー118とを有している。ストッパーブラケット116は、図3に示すように、L字状であって、上記スライドベース42の下面後端部で、かつ、図4に示すように、配設されている上記移動部材44よりも内側に一対並設されている。ストッパー118は、図3及び図4に示すように、ボルト状を呈し、一端側にゴム等の緩衝部材が取り付けられている。そして、該ストッパーブラケット116を貫通して設けられている。

【0027】安全保持部Hは、保持部ブラケット102と、スライドガイド104と、シリンダ106と、フローティングジョイント108と、軸受部110と、シャフト112と、ローラフォロア114とを有している。保持部ブラケット102は、図2及び図3に示すように、L字状であって、かつ、後背側にはリブ板を有し、その前側上部にはシリンダ106のピストンの往復直線運動をガイドするコ字状の外枠でなるスライドガイド104が取り付けられている。そして、上記スライドベース42が原位置にある場合において、該保持部ブラケット102は、上記ベース16上で、該ストッパー118

の緩衝部材のすぐ手前の位置に、載設されている。

【0028】シリンダ106は、図3に示すように、上記スライドベース42が原位置にある場合において、上記保持部ブラケット102と上記ストッパ118の緩衝部材との間で、シリンダケース側が上記ベース16上に配設され、そのピストンが鉛直方向に往復直線運動をする。該ピストンは、その中間部に円筒状のフローティングジョイント108が嵌入され、さらに、その先端にコ字状の軸受部110が配設されている。そして、シャフト112がローラフォロア114を貫通し、該軸受部110に配設されている。上記ストッパ118と該ローラフォロア114とは、該シリンダ106のピストンがトップにある場合において、当接可能となる高さレベルで、かつ、上記スライドベース42の移動に従って移動する上記ストッパ118の軌跡上に、上記ローラフォロア114が配置されている。なお、上記シリンダ106は、後記するセンサー142からの信号を受けて、後記する電磁弁144のスイッチングにより、ピストンが往復直線運動を行うように設定されている。

【0029】次に、エア装置140は、図6に示すように、自動制御機器でなるセンサー142と、切換弁でなる電磁弁144と、エアタンク146と、シリンダを有する切換弁148と、バキューム装置150と、エア取入れ口152と、フィルタレギュレータ154と、圧力スイッチ156と、接続管158、160とから構成されている。ここで、センサー142は、上記フレーム12の上部横枠材122の内側面で、図2に示すように、上記上部横枠材123から上記上部横枠材124に向かって、142a、142b、142cの順に3箇所設けられている。すなわち、センサー142aは、原位置にある上記スライドベース42の前端部よりも前方の位置に配設されている。また、センサー142b及び142cは、上記スライドベース42の原位置を検知可能な位置に、それぞれ配設されている。

【0030】電磁弁144は、該センサー142と接続され、かつ、上記駆動装置60のシリンダ部CLのシリンダ70、上記安全保持装置100の安全保持部Hのシリンダ106及び後記する切換弁148を作動させるシリンダを作動させるべく、各シリンダと接続されている。エアタンク146は、略円柱形状を呈し、図2及び図3に示すように、上記安全保持部Hの配設位置と上記下部横枠材128との間の上記ベース16上に、載設されている。該エアタンク146が、一時的にエアを蓄え、後記する切換弁148の作動に応じて、その蓄えられたエアが、パイプ状の接続管160及び上記自動車運転模擬装置20のハンドル支柱26を介して、ハンドル28に収納したエアバッグ30へ送給され、これを瞬時に膨脹させる。また、エア取入れ口152、フィルタレギュレータ154、圧力スイッチ156及び上記エアタンク146は、パイプ状の接続管158で、順次接続さ

れている。

【0031】ここで、フィルタレギュレータ154は、該エア取入れ口152から取り入れたエアに含まれている不純物を除去するためのものである。また、圧力スイッチ156は、取り入れたエアの圧力を調整するためのものである。また、上記エアタンク146、切換弁148、バキューム装置150及び上記自動車運転模擬装置20のハンドル支柱26は、該接続管160で、順次接続されている。切換弁148は、エアの流れを制御するべく、上記エアタンク146に蓄えられたエアを上記エアバッグ30へ送給させたり、上記エアバッグ30内のエアを後記するバキューム装置150により吸引させたりするための切換えスイッチである。該切換弁148は、シリンダの作動でスイッチングを行う。

【0032】バキューム装置150は、図2及び図3に示すように、上記駆動装置60の配設位置と上記下部横枠材127との間の上記ベース16上に、載設されている。該バキューム装置150は、上述したように、一旦膨脹したエアバッグ30内のエアを上記接続管160等を介して吸引するものである。なお、この自動車衝突模擬体験装置A1全体をコントロールする制御装置は、上記架台10の任意の場所に設置されている。

【0033】次に、上記第一具体例の自動車衝突模擬体験装置A1の使用状態について図面を利用して説明する。自動車衝突模擬体験装置A1は、使用される前(初期状態)においては、移送装置40のスライドベース42が、図1に示す原位置に置かれている。従って、該スライドベース42の上面に配設されている自動車運転模擬装置20も原位置に存在する。この場合において、コイルスプリング48は、最大収縮状態となっている。また、安全保持装置100の安全保持部Hのシリンダ106のピストンは、トップの状態であり、上記スライドベース42が原位置から前進しないように安全保持をしている。これは、センサー142bからの信号を受けて、電磁弁144が切り換えられ、該シリンダ106を作動させた結果である。

【0034】人間34が、自動車運転模擬装置20の座席22に着席し、シートベルト装置24を締着して、始動スイッチ32をオンにすると、まず、該安全保持部Hのシリンダ106のピストンがトップから下動して安全保持の状態が解除される。すると同時に、該電磁弁144がスイッチし、駆動装置60のシリンダ部CLのシリンダ70を作動させ、そのピストンの先端に配設されている駆動装置60のクラッチ部Cのシリンダ取付プレート78が後退移動して、噛み合っている被動側のクラッチ90bと駆動側のクラッチ90aとが離れる。従って、該クラッチ部Cは遊動状態となり、該コイルスプリング48が最大収縮状態から解放され、伸張する。これに伴って、上記スライドベース42は、レール14に従って、前進滑走する。

【0035】そして、上記スライドベース42のスプリングブラケット50が、抑止装置52に当接すると、上記スライドベース42が急停止する。この場合、上記スライドベース42の前端部がセンサー142a上を通過すると、通過の認識信号が上記電磁弁144へ送られ、その急停止の際に、自動車運転模擬装置20のハンドル28に収納したエアバッグ30を瞬時に膨脹させるべく、上記電磁弁144がスイッチし、切換弁148のシリンダを動作させて、該切換弁148のスイッチが行われて、エア装置140のエアタンク146から、蓄えら

れているエアが、該エアバッグ30へ流れるようになっている。
【0036】そして、上記スライドベース42の急停止と同時に、図7に示すように、人間34の直前で、上記エアバッグ30へエアが入り、瞬時に膨脹する。次に、人間34は、該シートベルト装置24を外し、該座席22から立ち上がって、自動車衝突模擬体験装置A1から離れる。人間34の自動車衝突模擬体験装置A1からの離脱を確認した後、図示しない制御装置を操作する。すると、まず、上記電磁弁144がスイッチし、上記シリンダ部CLのシリンダ70が作動し、そのピストンの先端に配設されている上記クラッチ部Cのシリンダ取付プレート78が前進移動して、上記被動側のクラッチ90bと上記駆動側のクラッチ90aとを噛み合わせる。

【0037】次に、上記駆動装置60の駆動部Dの駆動モータ62が回転し、チェーン66を介して連動しているクラッチ90も回転する。従って、上記クラッチ部Cの従動シャフト94に嵌合しているドラム96も回転するため、上記スライドベース42の前進滑走に追従して延びたワイヤー98が巻き取られてゆく。よって、上記スライドベース42は、該ワイヤー98の巻き取りに応じて、ゆっくり後退し、原位置まで復帰する。また、後退しながら、一旦膨脹した上記エアバッグ30は、上記切換弁148がスイッチし、バキューム装置150の作動により上記エアバッグ30内のエアが吸引されて、収縮収納される。後退する上記スライドベース42の後端部が、上記センサー142b上を通過すると、通過の認識信号が上記電磁弁144へ送られる。そして、上記スライドベース42が原位置に復帰した際に、上記電磁弁144がスイッチして、上記駆動装置60の駆動部Dの

駆動モータ62の回転は停止し、さらに、上記安全保持部Hのシリンダ106のピストンが上動してトップの状態となる。また、上記コイルスプリング48も最大収縮状態に戻る。
【0038】なお、センサー142cは、上記センサー142bと同様な機能を有しており、すなわち、上記スライドベース42の後端部が通過すると、通過の認識信号を発する。従って、上記スライドベース42が原位置に復帰した際に、上記電磁弁144の作動により、上記駆動装置60の駆動部Dの駆動モータ62の回転は停止

し、上記安全保持部Hのシリンダ106のピストンは上動してトップの状態となる。但し、該センサー142cは、上記センサー142bが何らかの故障により作動しなかった場合に作動するものであって、つまり、予備装置（緊急安全用装置）としての役割を果たすものである。以上の使用状態を、反復して連続的に実施する。

【0039】上記の自動車衝突模擬体験装置A1によれば、あらかじめ自動車衝突の際の衝撃と同時に、人間の直前に、瞬時に膨脹するエアバッグの状態を模擬体験することができるので、万一の自動車衝突事故の際にも周章狼狽することなく、沉着冷静に行動することができるようになる。そして、ドライバーの交通安全意識の高揚にもつながる。また、このエア装置140により、エアバッグの膨脹収縮を何度も反復して実施することができる。

【0040】次に、第二具体例を図8を利用して説明する。本第二具体例の自動車衝突模擬体験装置A2は、上記第一具体例の自動車衝突模擬体験装置A1の構成に、サイドエアバッグ装置200を追加したものである。従って、上記第一具体例の自動車衝突模擬体験装置A1の

架台10と、自動車運転模擬装置20と、移送装置40と、抑止装置52と、駆動装置60と、安全保持装置100と、エア装置140と、図示しない制御装置を備えている。
【0041】ここでは、サイドエアバッグ装置200についてのみ説明をする。サイドエアバッグ装置200は、支柱202と、収納部204と、サイドエアバッグ206とを有している。支柱202は、中空状であって、移送装置40のスライドベース42の上面に設置された自動車運転模擬装置20の座席22の座部の右側部近傍に立設されている。収納部204は、横長の箱形状を呈し、該支柱202の先端部に取り付けられ、その中にサイドエアバッグ206が収納されている。そして、該収納部204は、上記支柱202の中空部と連通した孔部を有し、エアの送給により該サイドエアバッグ206が膨脹する構造となっている。上記サイドエアバッグ206は、横長の袋状を呈している。

【0042】なお、該座席22又はハンドル28と、サイドエアバッグ装置200との配置関係（座席22又はハンドル28と、サイドエアバッグ装置200との間の距離や座席22に人間34が座った場合のサイドエアバッグ装置200の高さ等）は、実際の自動車のこれらの配置と略同一となっている。サイドエアバッグ装置200は、エア装置140に接続されている。従って、サイドエアバッグ206の膨脹収縮は、エアバッグ30と同様に行われる。すなわち、上記第一具体例と同様に、該スライドベース42は、レール14に従って、前進滑走する。そして、上記スライドベース42のスプリングブラケット50が、抑止装置52に当接すると、上記スライドベース42が急停止する。

【0043】この場合、上記スライドベース42の前端部がセンサー142a上を通過すると、通過の認識信号が電磁弁144へ送られ、その急停止の際に、自動車運転模擬装置20のハンドル28に収納したエアバッグ30及びサイドエアバッグ装置200の収納部204に収納したサイドエアバッグ206を瞬時に膨脹させるべく、該電磁弁144がスイッチし、切換弁148のシリンダを作動させて、該切換弁148のスイッチが行われて、エア装置140のエアタンク146から、蓄えられているエアが、該エアバッグ30及び該サイドエアバッグ206へ流れるようになっている。

【0044】そして、上記スライドベース42の急停止と同時に、図8に示すように、人間34の直前で、上記エアバッグ30及び上記サイドエアバッグ206へエアが入り、瞬時に膨脹する。次に、人間34は、シートベルト装置24を外し、上記座席22から立ち上がって、自動車衝突模擬体験装置A2から離れる。人間34の自動車衝突模擬体験装置A2からの離脱を確認した後、図示しない制御装置を操作する。上記第一具体例と同様に、上記スライドベース42が原位置に復帰するが、その際に、一旦膨脹した上記エアバッグ30及び上記サイドエアバッグ206は、上記切換弁148がスイッチし、バキューム装置150の作動により、上記エアバッグ30及び上記サイドエアバッグ206内のエアが吸引され、それぞれ収縮収納される。なお、上記エアバッグ30と上記サイドエアバッグ206の膨脹は、どちらか一方のみを実施できるものとしてもよい。

【0045】上記の自動車衝突模擬体験装置A2によれば、あらかじめ自動車衝突の際の衝撃と同時に、人間の直前に、瞬時に膨脹するエアバッグ又はサイドエアバッグの状態を模擬体験することができるので、万一の自動車衝突事故の際にも周章狼狽することなく、沈着冷静に行動することができるようになる。そして、ドライバーの交通安全意識の高揚にもつながる。また、このエア装置140により、エアバッグ又はサイドエアバッグの膨脹収縮を何度も反復して実施することができる。

【0046】なお、本具体例では、移送装置にコイルスプリングを使用しているが、そのコイルスプリングの種類を適宜変えてもよい。従って、移送装置の前進滑走速度を任意に変えることができる。また、本具体例では、搭載する各装置を所定の場所に設置しているが、作用が変わらない限り、任意の場所へ設置してもよい。さらに、本具体例では説明していないが、各装置の作動に伴う危険が生じないようにするため、適当な安全カバー、目隠し等の部材を付設してもよい。

【0047】

【発明の効果】本発明に基づく請求項1に記載の自動車衝突模擬体験装置によれば、あらかじめ自動車衝突の際の衝撃と同時に、人間の直前に、瞬時に膨脹するエアバッグの状態を模擬体験することができるので、万一の自

動車衝突事故の際にも周章狼狽することなく、沈着冷静に行動することができるようになる。そして、ドライバーの交通安全意識の高揚にもつながる。また、特に、請求項2に記載の自動車衝突模擬体験装置によれば、エアバッグの膨脹収縮を何度も反復して実施することができる。

【0048】さらに、請求項3に記載の自動車衝突模擬体験装置によれば、あらかじめ自動車衝突の際の衝撃と同時に、人間の直前に、瞬時に膨脹するエアバッグ又はサイドエアバッグの状態を模擬体験することができるので、万一の自動車衝突事故の際にも周章狼狽することなく、沈着冷静に行動することができるようになる。そして、ドライバーの交通安全意識の高揚にもつながる。また、エアバッグ又はサイドエアバッグの膨脹収縮を何度も反復して実施することができる。

【図面の簡単な説明】

【図1】本発明に基づく第一具体例の自動車衝突模擬体験装置を示す斜視図である。

【図2】本発明に基づく第一具体例の、自動車運転模擬装置及びスライドベースを除く自動車衝突模擬体験装置を示す平面の説明図である。

【図3】本発明に基づく第一具体例の、自動車運転模擬装置を除く自動車衝突模擬体験装置を一部破断して示す側面の説明図である。

【図4】図2のB-B断面図である。

【図5】本発明に基づく第一具体例の、(a)は駆動装置を一部破断して示す平面図、(b)は駆動装置を一部破断して示す側面図である。

【図6】本発明に基づく第一具体例のエア装置の接続関係図である。

【図7】本発明に基づく第一具体例の自動車衝突模擬体験装置の使用状態を示す説明図である。

【図8】本発明に基づく第二具体例の自動車衝突模擬体験装置の使用状態を示す説明図である。

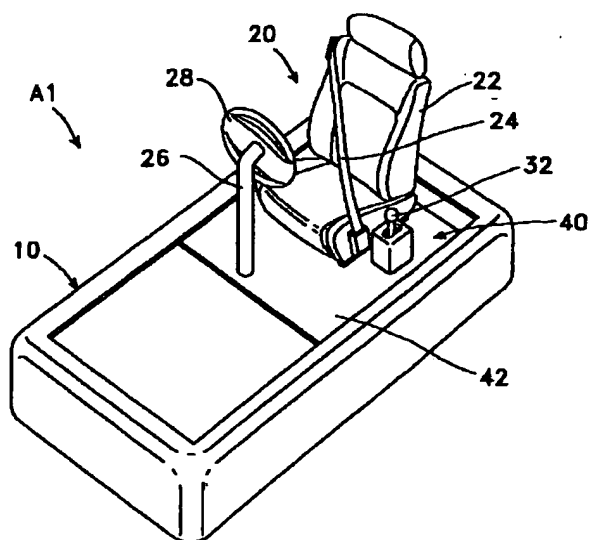
【符号の説明】

- 10 架台
- 14 レール
- 20 自動車運転模擬装置
- 22 座席
- 24 シートベルト装置
- 28 ハンドル
- 30 エアバッグ
- 40 移送装置
- 48 コイルスプリング
- 52 抑止装置
- 60 駆動装置
- 100 安全保持装置
- 140 エア装置
- 142 センサー
- 144 電磁弁

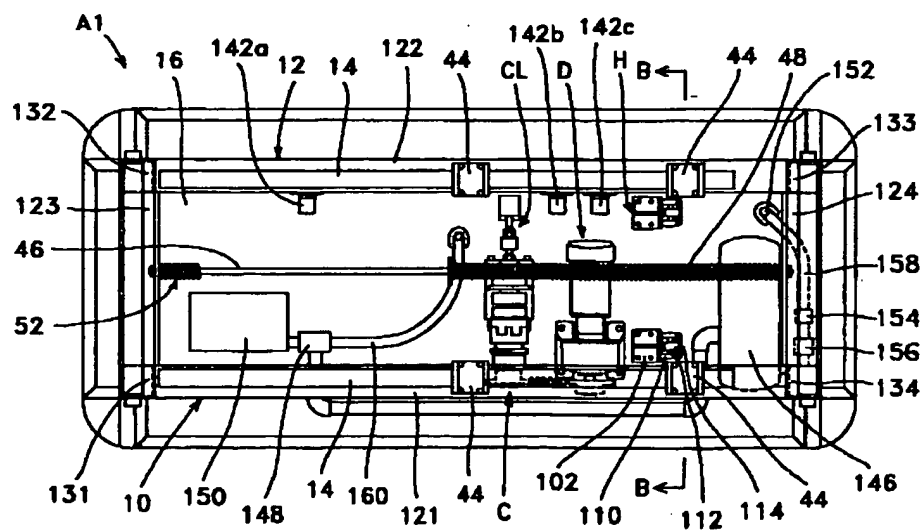
13
146 エアタンク
148 切換弁
150 バキューム装置

14
200 サイドエアバッグ装置
A1、A2 自動車衝突模倣体験装置

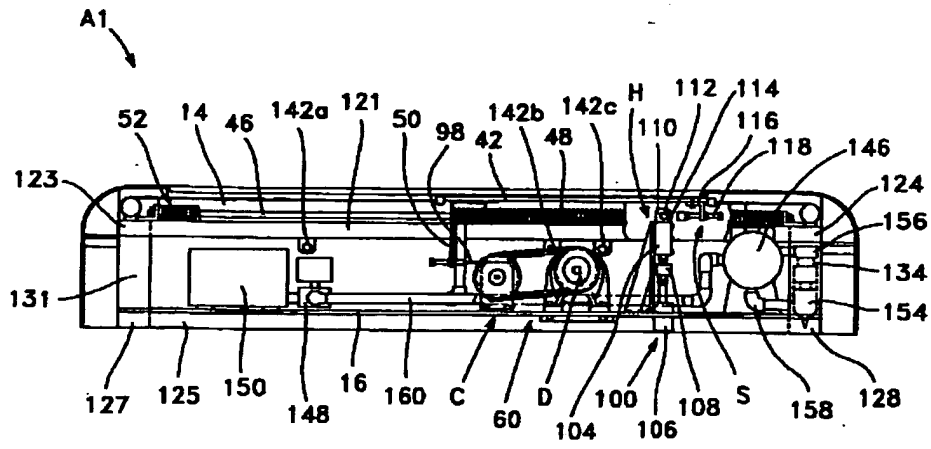
【図1】



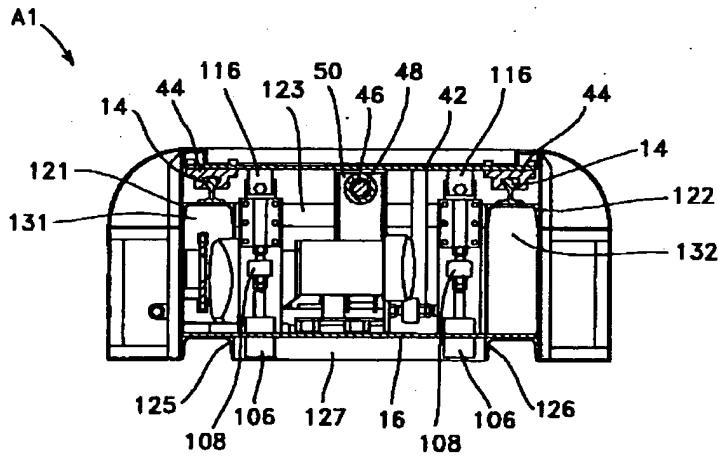
【図2】



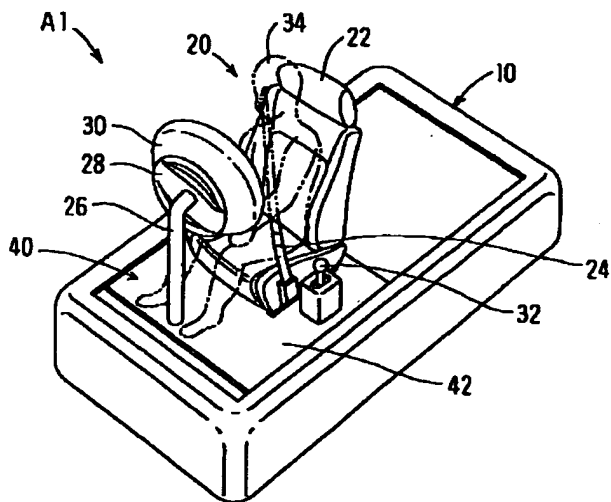
【図3】



【図4】



【図7】



【図8】

